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COBGDB - The GnuCOBOL TUI DEBUGGER / ANIMATOR
HOW TO USE COBGDB



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1. Introduction

COBGDB is a TUI (Text User Interface) application, programmed in C, designed to assist in animate and debugging GnuCOBOL TUI code **using GDB**.

The project is hosted at <https://github.com/marcsosduma/cobgdb>

***Very important: you don't need to know GDB and all its many commands
(<https://www.sourceware.org/gdb/>).***


***COBGDB has its own interface that is very simple to use
and is responsible for interfacing the underlying GDB which is the real debug and animate engine
but operates practically in a transparent and invisible way for the user.***

The COBGDB application is based on the extension for Visual Studio Code (VSCode) created by Oleg Kunitsyn, which can be found on GitHub: <https://github.com/OlegKunitsyn/gnucobol-debug>.
warning: COBGDB is still currently under development.

***At <https://github.com/marcsosduma/cobgdb> in the Windows subdirectory,
the executable program cobgdb.exe for this operating system is available and ready to use.***

To compile COBGDB from C source code on Windows, you can use MinGW.

The Makefile is configured to generate the program `cobgdb.exe` for both Windows and Linux.

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1.1. Installing the debugger on Windows

On Windows, just download **cobgdb.exe** from following folder:
<https://github.com/marcsosduma/cobgdb/tree/main/windows>.

As an example you can put **cobgdb.exe** into the "bin" folder of your GnuCOBOL installation (the same folder where the GnuCOBOL compiler **cobc.exe** is located)

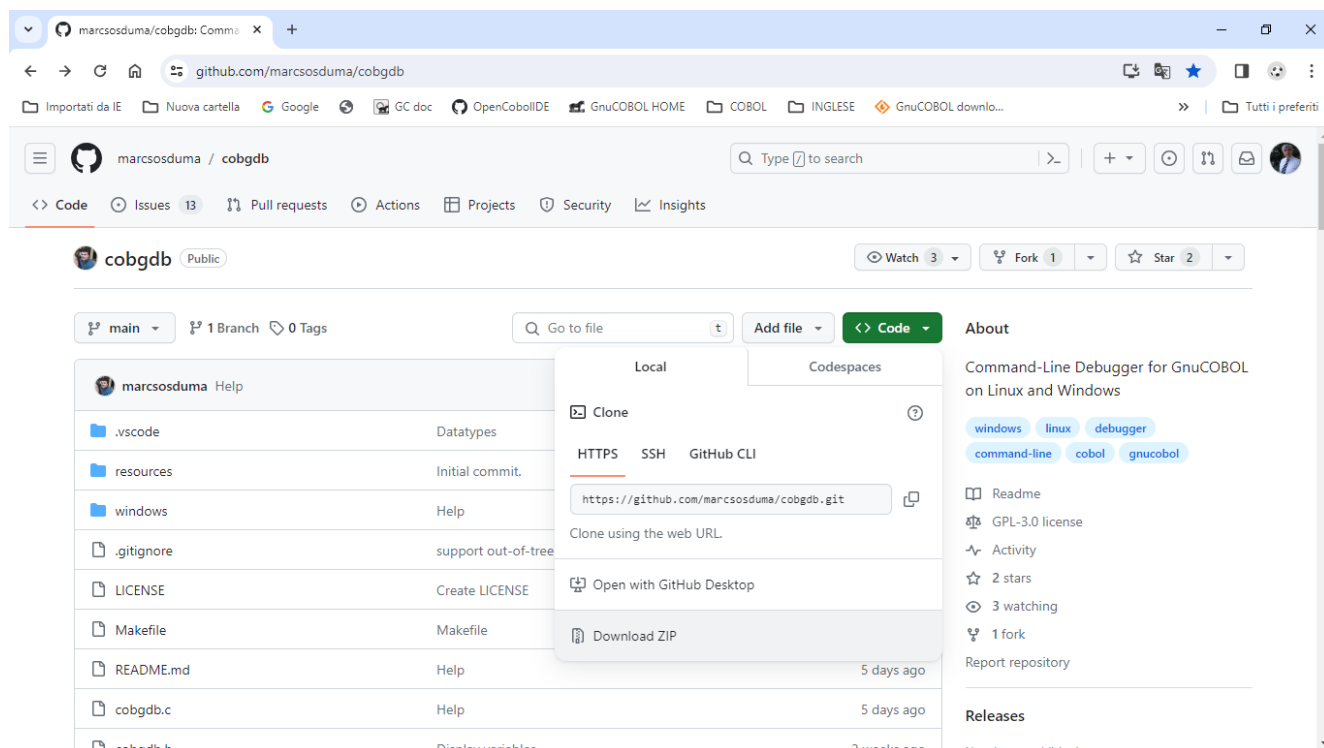
or


first install MinGW (Minimalist GNU for Windows).

Then execute the make ('mingw32-make' for Windows) command to compile the code from C source.

Note: if you have security problems downloading an .exe file then you can try download the entire repository with the following github button **<> Code v --> Download ZIP**

Then unzip the file and copy cobgdb.exe to the "bin" folder of your GnuCOBOL installation (the same folder where the GnuCOBOL compiler cobc.exe is located)



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1.2. Compile and Debug GnuCOBOL programs

Compile and run a debugging session of the sample program using the following command:

cobgdb customer.cob -x -lpdcurses

Source code of customer.cob used also for following tutorial is at:

<https://github.com/marcsosduma/cobgdb/tree/main/windows>

Note: '-lpdcurses' is an instance of an argument that can be indirectly passed to 'cobc' by 'cobgdb,' even if it is not used by 'cobgdb' itself.

or, other example for cobc parameters , use : **cobgdb customer.cob -x -Tcustomer.txt** .(-T creates a compilation list output into **customer.txt** file)

COBGDB takes one or more programs with COB or CBL extension as parameters and runs the GnuCOBOL compiler with the following format:

cobc -g -fsource-location -ftraceall -v -free -O0 -x prog.cob prog2.cob ...

To debug multiple programs, use COBGDB with the following syntax:

cobgdb prog.cob subprog1.cob subprog2.cob ...


This will create a single prog.exe executable.

You can run GDB/GDBSERVER remotely using the "A" (Attach) key.

COBGDB will prompt you to provide the server and port in the format server: port or the PID of the application.


Example:

- localhost: 5555
- 9112

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1.3. Main Commands

Cmd		Description	
?	Help	Show the HELP window and text	
B	Breakpoint	Toggle (Set or Unset) a breakpoint at a specific line of the Procedure Division code.	
R	Run	Runs the program <u>from the first Cobol statement</u> until a breakpoint is encountered. Always use this command to start a debugging session.	
C	Cursor	Runs the program until it reaches the selected line.	
N	Next	Runs the program until the next line but does not enter a subroutine executed by CALL or PERFORM.	
S	Step	Runs the program until the next line. If needed it enter a subroutine executed by CALL or PERFORM.	
G	Go	Continues the program execution until it encounters a stopping point: a breakpoint, end of the program, or the return from a subroutine (PERFORM / CALL).	
J	Jump	Ask for a line number and Runs the program until it reaches that line.	
V	Variables	Displays a new window with the set of variables for the running program. From this window you can also change the value of variables	
H	sHow	Shows a window with the values of variables on the selected line.	
F	File	When cobgdb is executed with more than one program, allows selecting one of those source file for debugging commands.	
A	Attach	Attach to GDBSERVER or Application PID.	
Q	Quit	Quits (Ends) the debugging session and the program.	

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2. Tutorial - Sample Debugging Session

Following tutorial is on a Windows 10 platform using following version of GnuCOBOL:


```
cobc (GnuCOBOL) 3.2.0
Copyright (C) 2023 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <https://gnu.org/licenses/gpl.html>
This is free software; see the source for copying conditions. There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
Written by Keisuke Nishida, Roger While, Ron Norman, Simon Sobisch, Edward Hart
Built Jul 28 2023 16:07:38
Packaged Jul 28 2023 16:58:47 UTC
C version (MinGW) "13.1.0"
```

Downloaded from <https://www.arnoldtrembley.com/GnuCOBOL.htm>

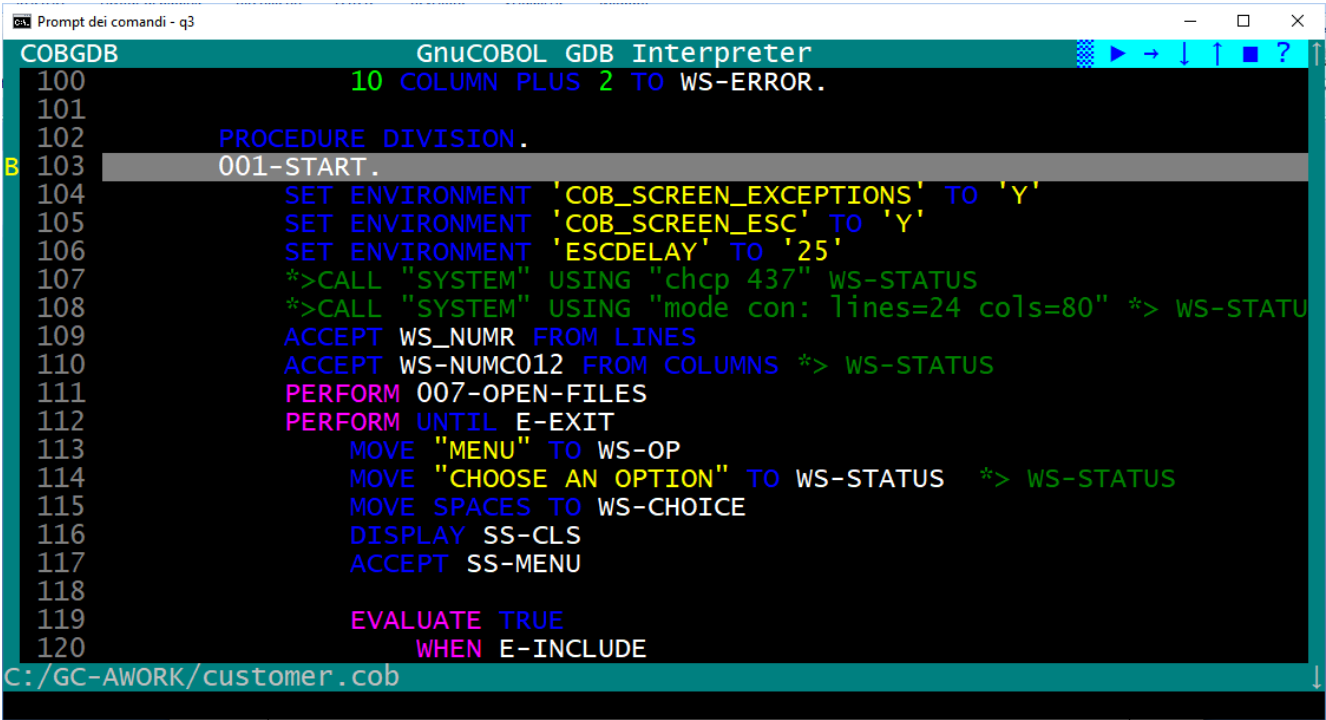
===== Version 3.2 =====

GnuCOBOL 3.2 (28Jul2023) MSYS2 64-bit [GC32M-BDB-x64.7z](#) -- MSYS2 64-bit GnuCOBOL 3.2
Final release **with full debugging support**. (95.4 Megabytes).

GnuCOBOL 3.2 (28Jul2023) MSYS2 32-bit [GC32M-BDB-x32.7z](#) -- MSYS2 32-bit GnuCOBOL 3.2
Final release **with full debugging support**. (96.1 Megabytes).

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After executing **cobgdb customer.cob -x -lpdcurses** the application automatically insert a Breakpoint at first executable program statement of PROCEDURE DIVISION (see the **B** symbol at left of line 103 in this sample) and displays following screen:



```

COBGDB                               GnuCOBOL GDB Interpreter
100          10 COLUMN PLUS 2 TO WS-ERROR.
101
102      PROCEDURE DIVISION.
103  B  001-START.
104          SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
105          SET ENVIRONMENT 'COB_SCREEN_ESC' TO 'Y'
106          SET ENVIRONMENT 'ESCDELAY' TO '25'
107          *>CALL "SYSTEM" USING "chcp 437" WS-STATUS
108          *>CALL "SYSTEM" USING "mode con: lines=24 cols=80" *> WS-STATUS
109          ACCEPT WS_NUMR FROM LINES
110          ACCEPT WS_NUMC012 FROM COLUMNS *> WS-STATUS
111          PERFORM 007-OPEN-FILES
112          PERFORM UNTIL E-EXIT
113              MOVE "MENU" TO WS-OP
114              MOVE "CHOOSE AN OPTION" TO WS-STATUS *> WS-STATUS
115              MOVE SPACES TO WS-CHOICE
116              DISPLAY SS-CLS
117              ACCEPT SS-MENU
118
119              EVALUATE TRUE
120                  WHEN E-INCLUDE
C:/GC-AWORK/customer.cob

```


You can scroll the source code window with cursor keys UP and DOWN, PG UP and PG DOWN or with mouse wheel or with mouse left click on the right scroll bar. Use cursor RIGHT and cursor LEFT to scroll horizontally,

In the upper right window corner there is a "button bar" where you can find some buttons (symbols):


>
→
↓
↑
■
?

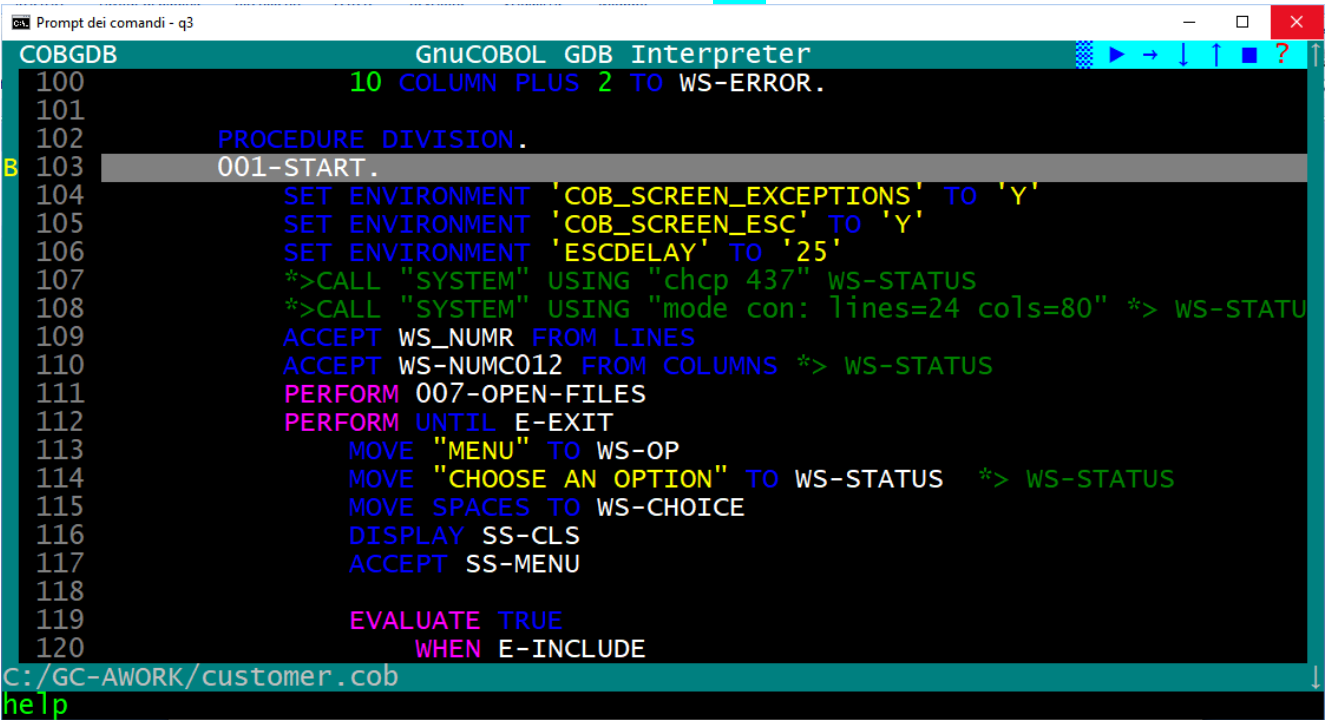
>	=	Run	command
→	=	Next	command
↓	=	Step	command
↑	=	Go	command
■	=	Quit	command
?	=	Help	command

when you hover over one of these commands, you get the corresponding command description (like a tooltip) displayed at the bottom left of the screen.

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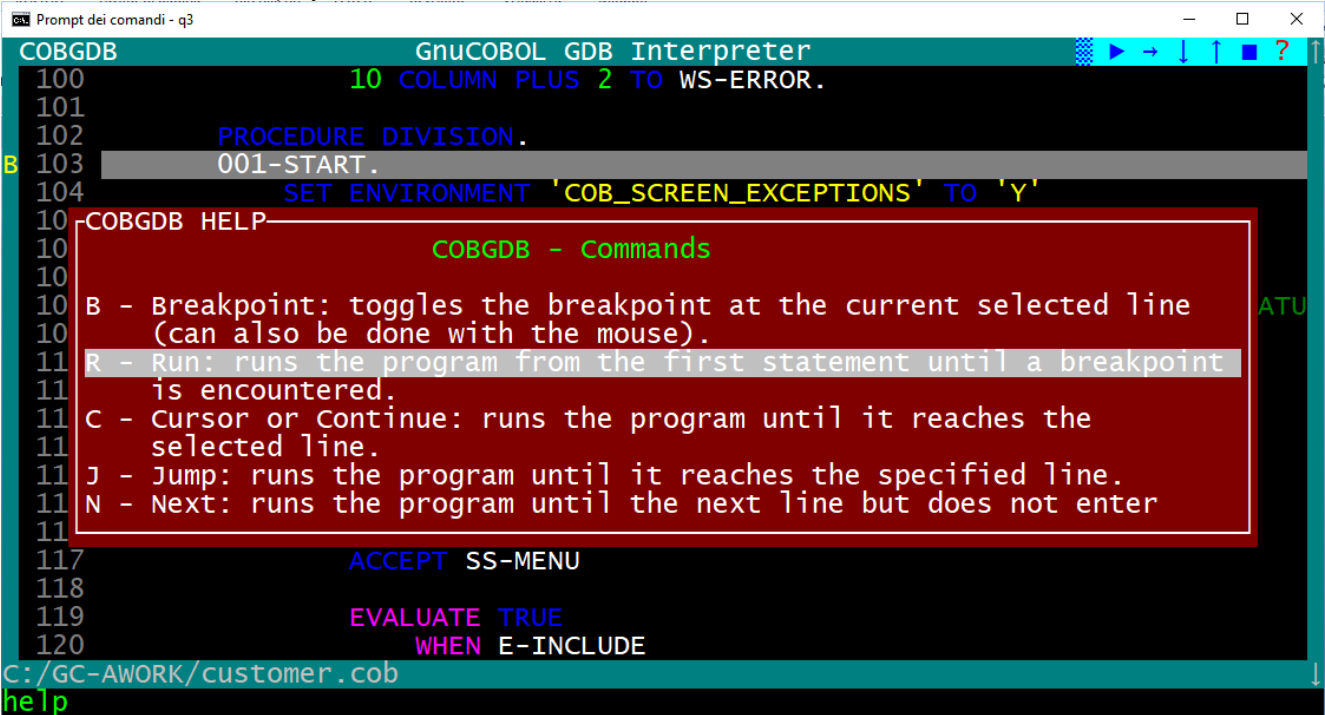
2.1. Help Command

Type ? HELP command (key) or left click with mouse on the  button:




```
COBGDB GnuCOBOL GDB Interpreter
100 10 COLUMN PLUS 2 TO WS-ERROR.
101
102 PROCEDURE DIVISION.
103 001-START.
104 SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
105 SET ENVIRONMENT 'COB_SCREEN_ESC' TO 'Y'
106 SET ENVIRONMENT 'ESCDELAY' TO '25'
107 *>CALL "SYSTEM" USING "chcp 437" WS-STATUS
108 *>CALL "SYSTEM" USING "mode con: lines=24 cols=80" *> WS-STATUS
109 ACCEPT WS_NUMR FROM LINES
110 ACCEPT WS-NUMC012 FROM COLUMNS *> WS-STATUS
111 PERFORM 007-OPEN-FILES
112 PERFORM UNTIL E-EXIT
113 MOVE "MENU" TO WS-OP
114 MOVE "CHOOSE AN OPTION" TO WS-STATUS *> WS-STATUS
115 MOVE SPACES TO WS-CHOICE
116 DISPLAY SS-CLS
117 ACCEPT SS-MENU
118
119 EVALUATE TRUE
120 WHEN E-INCLUDE
C:/GC-AWORK/customer.cob
help
```

the HELP window is displayed




```
COBGDB GnuCOBOL GDB Interpreter
100 10 COLUMN PLUS 2 TO WS-ERROR.
101
102 PROCEDURE DIVISION.
103 001-START.
104 SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
105 COBGDB HELP
106
107 COBGDB - commands
108
109 B - Breakpoint: toggles the breakpoint at the current selected line
110 (can also be done with the mouse).
111 R - Run: runs the program from the first statement until a breakpoint
112 is encountered.
113 C - Cursor or Continue: runs the program until it reaches the
114 selected line.
115 J - Jump: runs the program until it reaches the specified line.
116 N - Next: runs the program until the next line but does not enter
117
118 ACCEPT SS-MENU
119
120 EVALUATE TRUE
121 WHEN E-INCLUDE
C:/GC-AWORK/customer.cob
help
```


scroll the Help window with cursor keys UP and DOWN or mouse wheel.

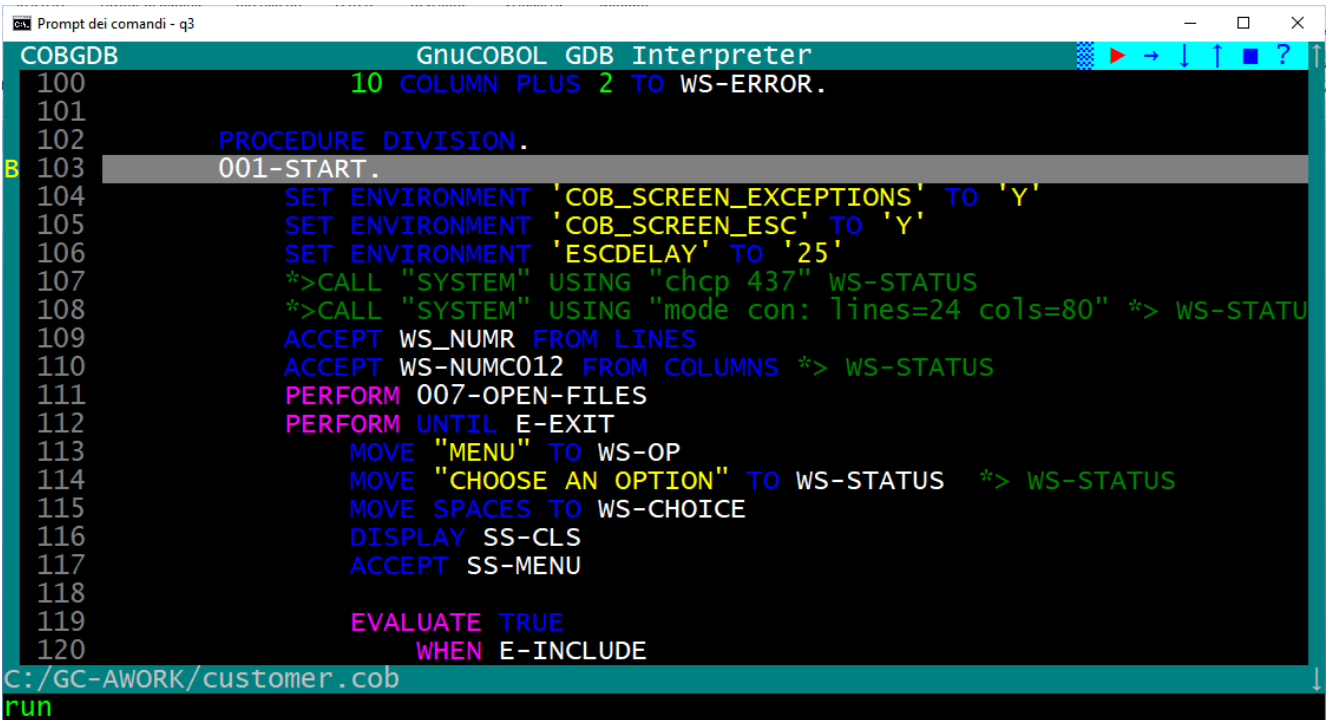
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Use ESC or Enter or left click to exit from this HELP window and return to debugging session.

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2.2. Run Command

To start executing the program and the debugging session from first program statement you always must use the "R" command (key) or left click with mouse on the  **Run** button




```

COBGDB GnuCOBOL GDB Interpreter
100      10 COLUMN PLUS 2 TO WS-ERROR.
101
102      PROCEDURE DIVISION.
103      001-START.
104          SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
105          SET ENVIRONMENT 'COB_SCREEN_ESC' TO 'Y'
106          SET ENVIRONMENT 'ESCDelay' TO '25'
107          *>CALL "SYSTEM" USING "chcp 437" WS-STATUS
108          *>CALL "SYSTEM" USING "mode con: lines=24 cols=80" *> WS-STATUS
109          ACCEPT WS_NUMR FROM LINES
110          ACCEPT WS_NUMC012 FROM COLUMNS *> WS-STATUS
111          PERFORM 007-OPEN-FILES
112          PERFORM UNTIL E-EXIT
113              MOVE "MENU" TO WS-OP
114              MOVE "CHOOSE AN OPTION" TO WS-STATUS *> WS-STATUS
115              MOVE SPACES TO WS-CHOICE
116              DISPLAY SS-CLS
117              ACCEPT SS-MENU
118
119              EVALUATE TRUE
120                  WHEN E-INCLUDE
C:/GC-AWORK/customer.cob
run

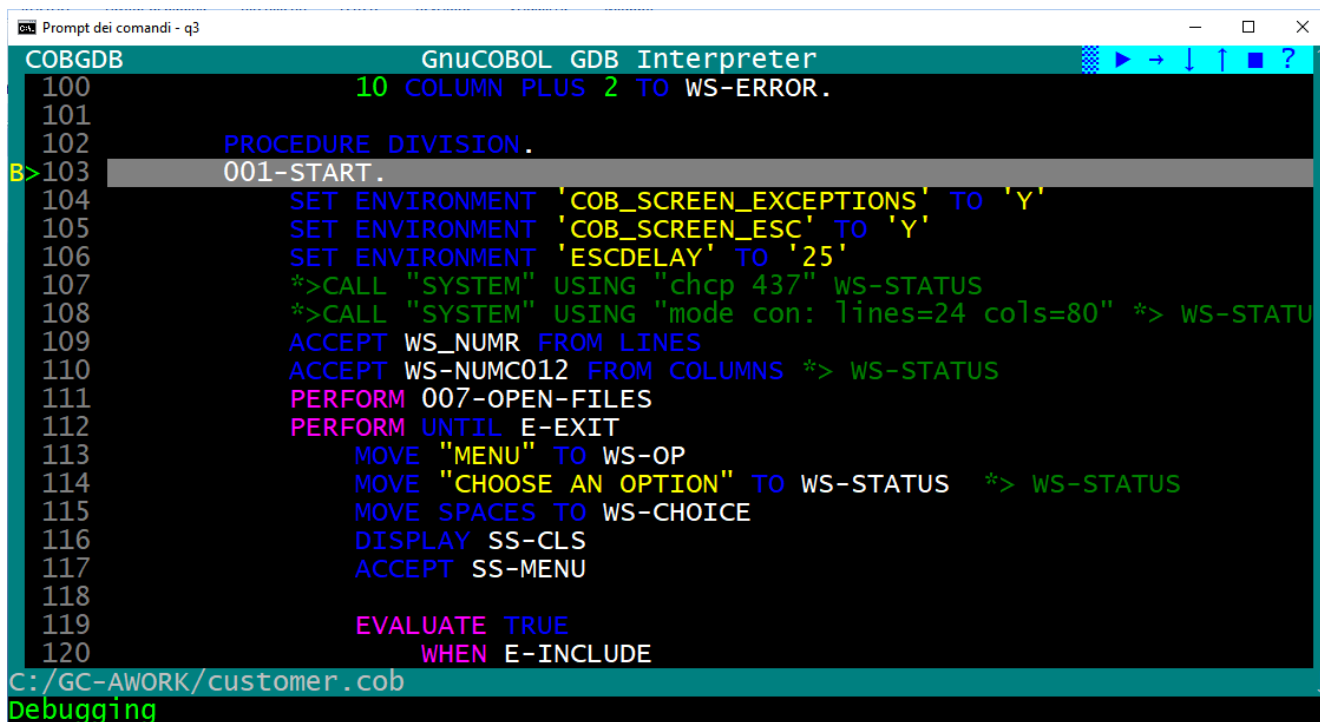
```

cobgdb opens the program terminal window (the application will run in this separate window.).




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go back to the COBGDB screen, and you see a  green symbol on the left of statement where initial Breakpoint is present (in our example is at line 103 **B> 103**):




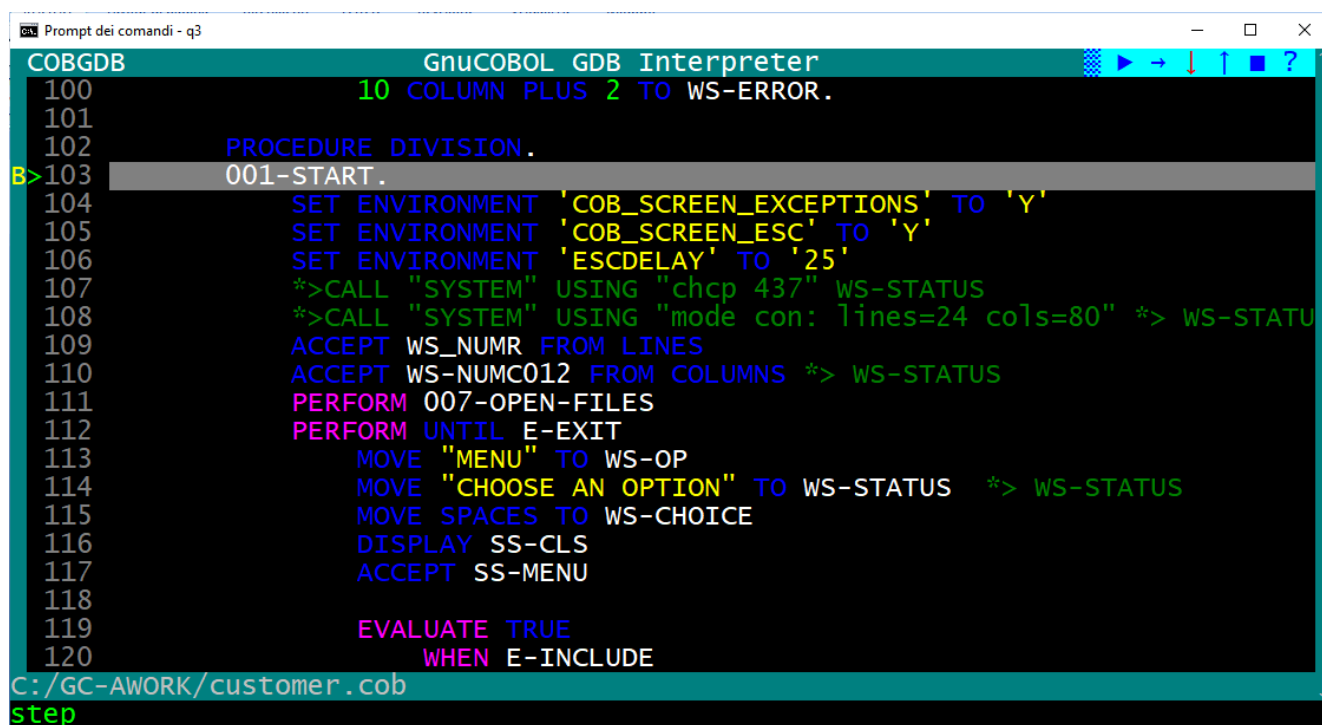
From that moment on, you can use all the commands (keys) or corresponding buttons to "animate" and debug the application, example: **"S"** (Step), **"N"** (Next) and **"G"** (Go) and so on.

During the source code animation, the debugger automatically shows some pop-up windows with variables content from the line in execution.

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2.3. Step Command


Proceed with **S** (Step) command or left click with mouse the  button:.

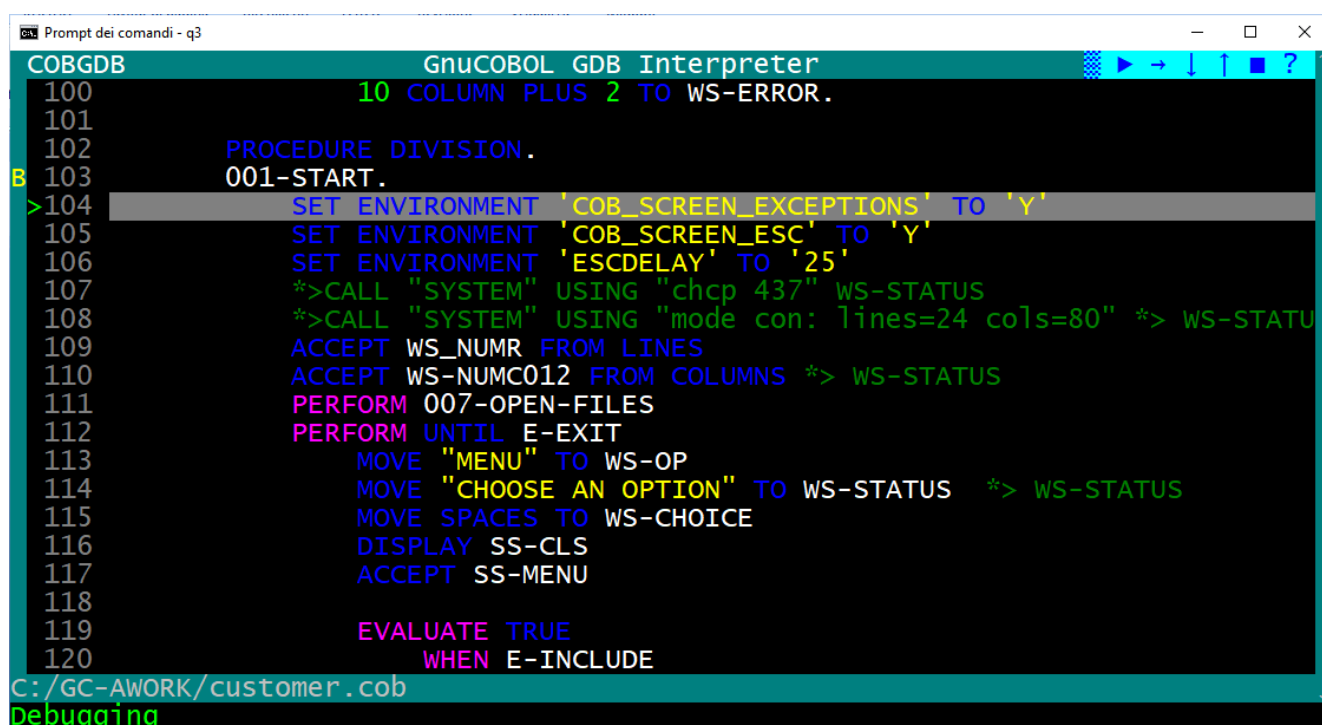


```

COBGDB          GnuCOBOL GDB Interpreter
100              10 COLUMN PLUS 2 TO WS-ERROR.
101
102      PROCEDURE DIVISION.
B>103      001-START.
104          SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
105          SET ENVIRONMENT 'COB_SCREEN_ESC' TO 'Y'
106          SET ENVIRONMENT 'ESCDELAY' TO '25'
107          *>CALL "SYSTEM" USING "chcp 437" WS-STATUS
108          *>CALL "SYSTEM" USING "mode con: lines=24 cols=80" *> WS-STATUS
109          ACCEPT WS_NUMR FROM LINES
110          ACCEPT WS_NUMC012 FROM COLUMNS *> WS-STATUS
111          PERFORM 007-OPEN-FILES
112          PERFORM UNTIL E-EXIT
113              MOVE "MENU" TO WS-OP
114              MOVE "CHOOSE AN OPTION" TO WS-STATUS  *> WS-STATUS
115              MOVE SPACES TO WS-CHOICE
116              DISPLAY SS-CLS
117              ACCEPT SS-MENU
118
119              EVALUATE TRUE
120                  WHEN E-INCLUDE
C:/GC-AWORK/customer.cob
step

```


the  green symbol now is on the following line 104:



```

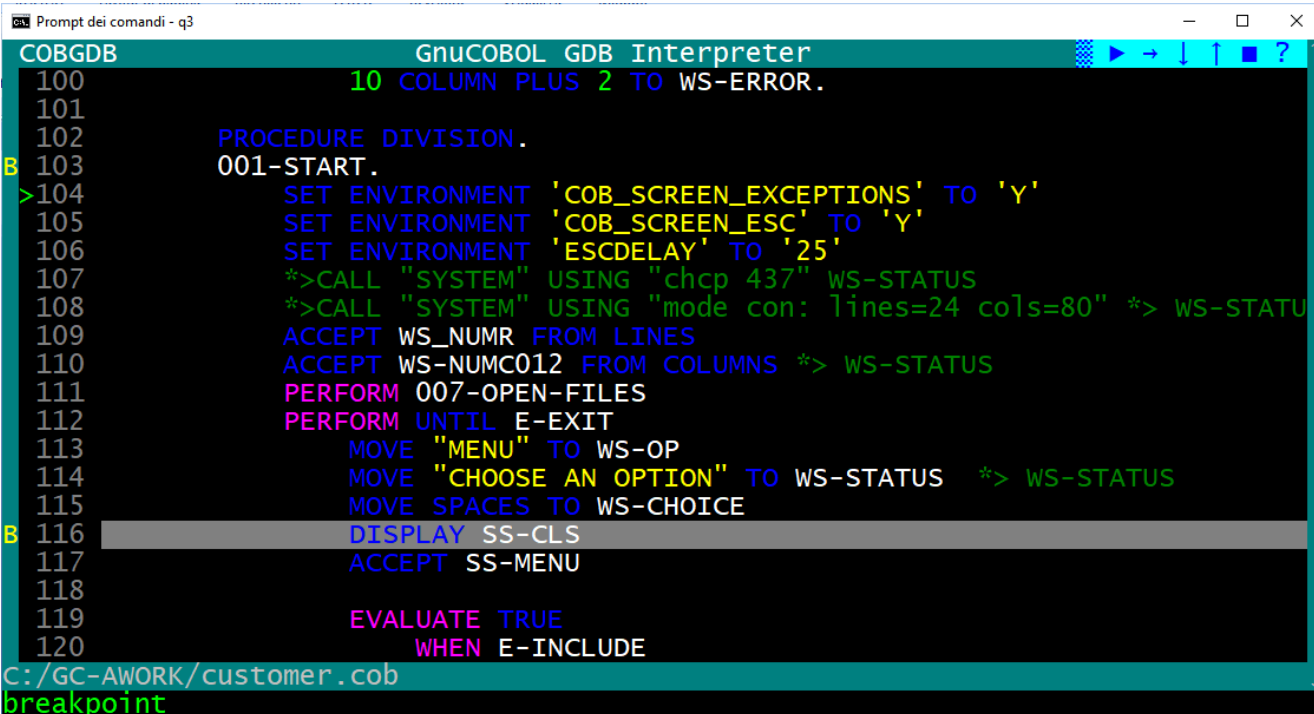
COBGDB          GnuCOBOL GDB Interpreter
100              10 COLUMN PLUS 2 TO WS-ERROR.
101
102      PROCEDURE DIVISION.
B>103      001-START.
>104          SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
105          SET ENVIRONMENT 'COB_SCREEN_ESC' TO 'Y'
106          SET ENVIRONMENT 'ESCDELAY' TO '25'
107          *>CALL "SYSTEM" USING "chcp 437" WS-STATUS
108          *>CALL "SYSTEM" USING "mode con: lines=24 cols=80" *> WS-STATUS
109          ACCEPT WS_NUMR FROM LINES
110          ACCEPT WS_NUMC012 FROM COLUMNS *> WS-STATUS
111          PERFORM 007-OPEN-FILES
112          PERFORM UNTIL E-EXIT
113              MOVE "MENU" TO WS-OP
114              MOVE "CHOOSE AN OPTION" TO WS-STATUS  *> WS-STATUS
115              MOVE SPACES TO WS-CHOICE
116              DISPLAY SS-CLS
117              ACCEPT SS-MENU
118
119              EVALUATE TRUE
120                  WHEN E-INCLUDE
C:/GC-AWORK/customer.cob
Debugging

```

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Now you can proceed with S command or N command or as an example:


- Scroll with cursor down to select line 116 of Procedure Division and type "B" (to set a Breakpoint), (you also can simply click with mouse left button on the 116 row number)
- The application displays a "B" on the left of the line (type B again - or re-click - when you want to delete the Breakpoint, not do that at this moment)





```

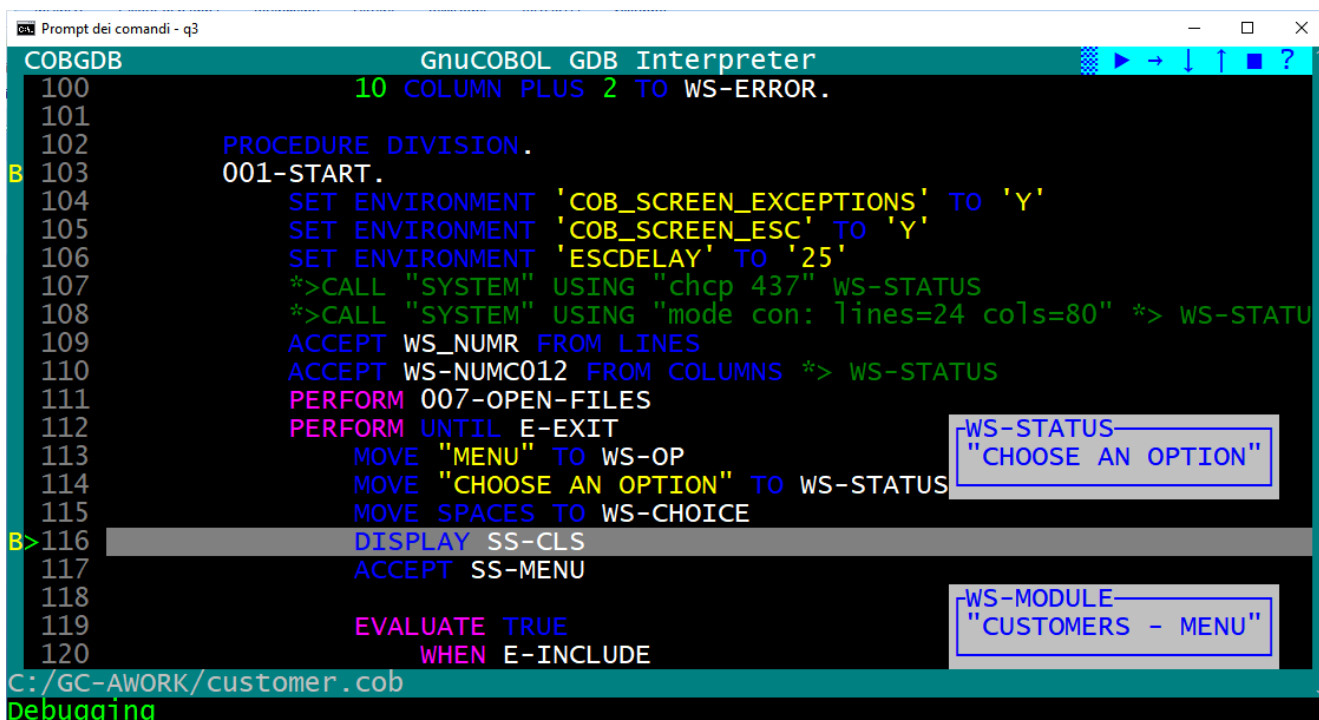
COBGDB GnuCOBOL GDB Interpreter
100      10 COLUMN PLUS 2 TO WS-ERROR.
101
102      PROCEDURE DIVISION.
103      001-START.
104      SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
105      SET ENVIRONMENT 'COB_SCREEN_ESC' TO 'Y'
106      SET ENVIRONMENT 'ESCDELAY' TO '25'
107      *>CALL "SYSTEM" USING "chcp 437" WS-STATUS
108      *>CALL "SYSTEM" USING "mode con: lines=24 cols=80" *> WS-STATUS
109      ACCEPT WS_NUMR FROM LINES
110      ACCEPT WS_NUMC012 FROM COLUMNS *> WS-STATUS
111      PERFORM 007-OPEN-FILES
112      PERFORM UNTIL E-EXIT
113          MOVE "MENU" TO WS-OP
114          MOVE "CHOOSE AN OPTION" TO WS-STATUS *> WS-STATUS
115          MOVE SPACES TO WS-CHOICE
116      DISPLAY SS-CLS
117      ACCEPT SS-MENU
118
119          EVALUATE TRUE
120              WHEN E-INCLUDE
C:/GC-AWORK/customer.cob
breakpoint

```

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2.4. Go Command


Type **G** (Go) or left click with mouse the  button to execute the program until a B Breakpoint is detected: the system reach the second breakpoint at line 116 and displays a green  symbol to the left of the line to be executed, see following screen:



```

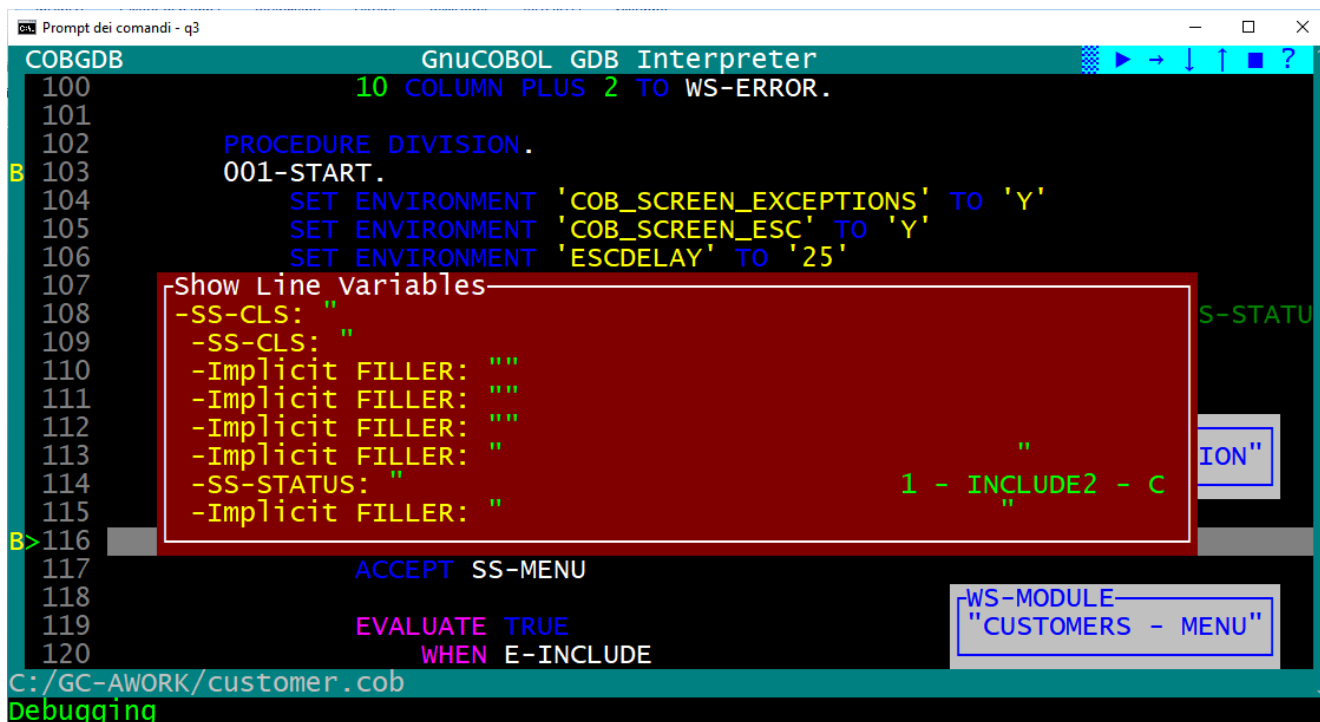
COBGDB GnuCOBOL GDB Interpreter
100      10 COLUMN PLUS 2 TO WS-ERROR.
101
102      PROCEDURE DIVISION.
103      001-START.
104          SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
105          SET ENVIRONMENT 'COB_SCREEN_ESC' TO 'Y'
106          SET ENVIRONMENT 'ESCDELAY' TO '25'
107          *>CALL "SYSTEM" USING "chcp 437" WS-STATUS
108          *>CALL "SYSTEM" USING "mode con: lines=24 cols=80" *> WS-STATUS
109          ACCEPT WS_NUMR FROM LINES
110          ACCEPT WS-NUMC012 FROM COLUMNS *> WS-STATUS
111          PERFORM 007-OPEN-FILES
112          PERFORM UNTIL E-EXIT
113              MOVE "MENU" TO WS-OP
114              MOVE "CHOOSE AN OPTION" TO WS-STATUS
115              MOVE SPACES TO WS-CHOICE
116      B> 116      DISPLAY SS-CLS
117              ACCEPT SS-MENU
118
119              EVALUATE TRUE
120                  WHEN E-INCLUDE
WS-STATUS
"CHOOSE AN OPTION"
WS-MODULE
"CUSTOMERS - MENU"
C:/GC-AWORK/customer.cob
Debugging

```

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2.5. Show Command

typing the 'H' command (key) allows you to view the variables on the highlighted line.



```

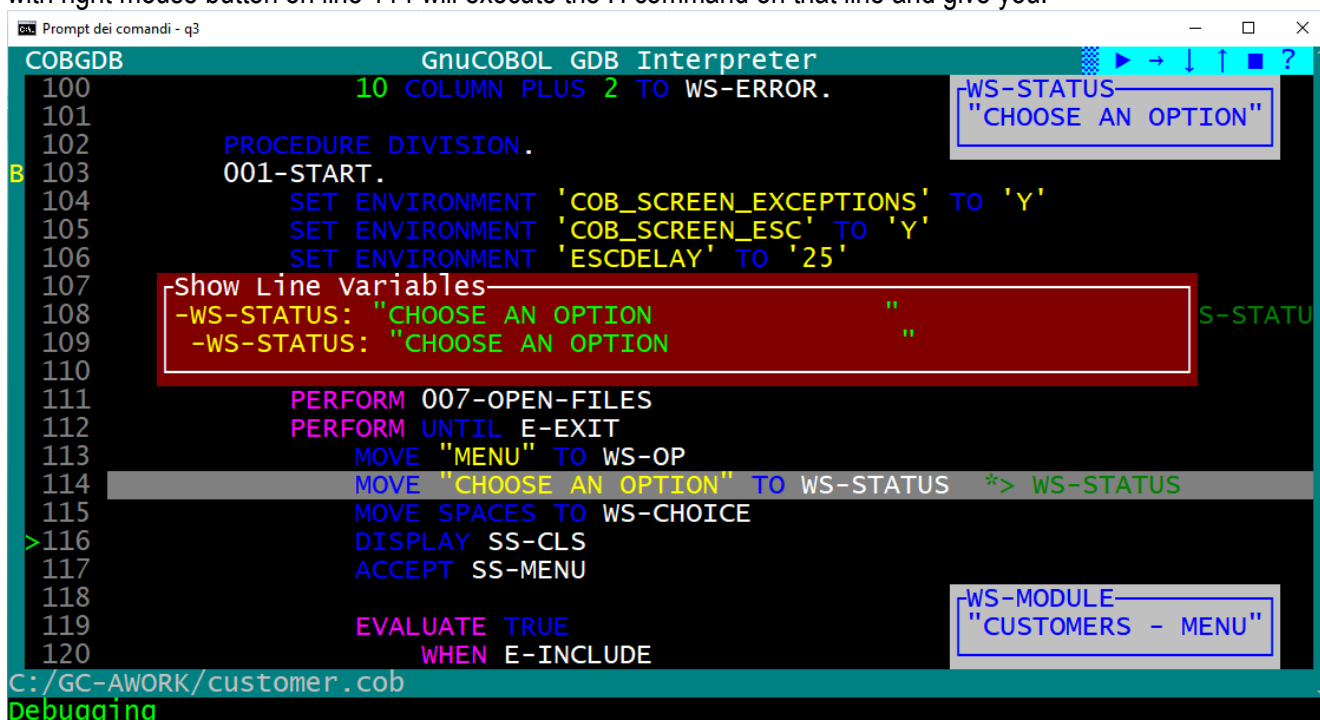
COBGDB GnuCOBOL GDB Interpreter
100 10 COLUMN PLUS 2 TO WS-ERROR.
101
102 PROCEDURE DIVISION.
103 001-START.
104 SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
105 SET ENVIRONMENT 'COB_SCREEN_ESC' TO 'Y'
106 SET ENVIRONMENT 'ESCDELAY' TO '25'
107
108
109
110
111
112
113
114
115
116
117 ACCEPT SS-MENU
118
119 EVALUATE TRUE
120 WHEN E-INCLUDE

C:/GC-AWORK/customer.cob
Debugging

Show Line Variables
-SS-CLS: "
-SS-CLS: "
-Implicit FILLER: ""
-Implicit FILLER: ""
-Implicit FILLER: ""
-Implicit FILLER: ""
-SS-STATUS: "
-Implicit FILLER: "

```

Note: to display the content of variables you can also click with right mouse button on a source line, example click with right mouse button on line 114 will execute the H command on that line and give you:




```

COBGDB GnuCOBOL GDB Interpreter
100 10 COLUMN PLUS 2 TO WS-ERROR.
101
102 PROCEDURE DIVISION.
103 001-START.
104 SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
105 SET ENVIRONMENT 'COB_SCREEN_ESC' TO 'Y'
106 SET ENVIRONMENT 'ESCDELAY' TO '25'
107
108
109
110
111 PERFORM 007-OPEN-FILES
112 PERFORM UNTIL E-EXIT
113 MOVE "MENU" TO WS-OP
114 MOVE "CHOOSE AN OPTION" TO WS-STATUS * > WS-STATUS
115 MOVE SPACES TO WS-CHOICE
116 DISPLAY SS-CLS
117 ACCEPT SS-MENU
118
119 EVALUATE TRUE
120 WHEN E-INCLUDE

C:/GC-AWORK/customer.cob
Debugging

Show Line Variables
-WS-STATUS: "CHOOSE AN OPTION
-WS-STATUS: "CHOOSE AN OPTION

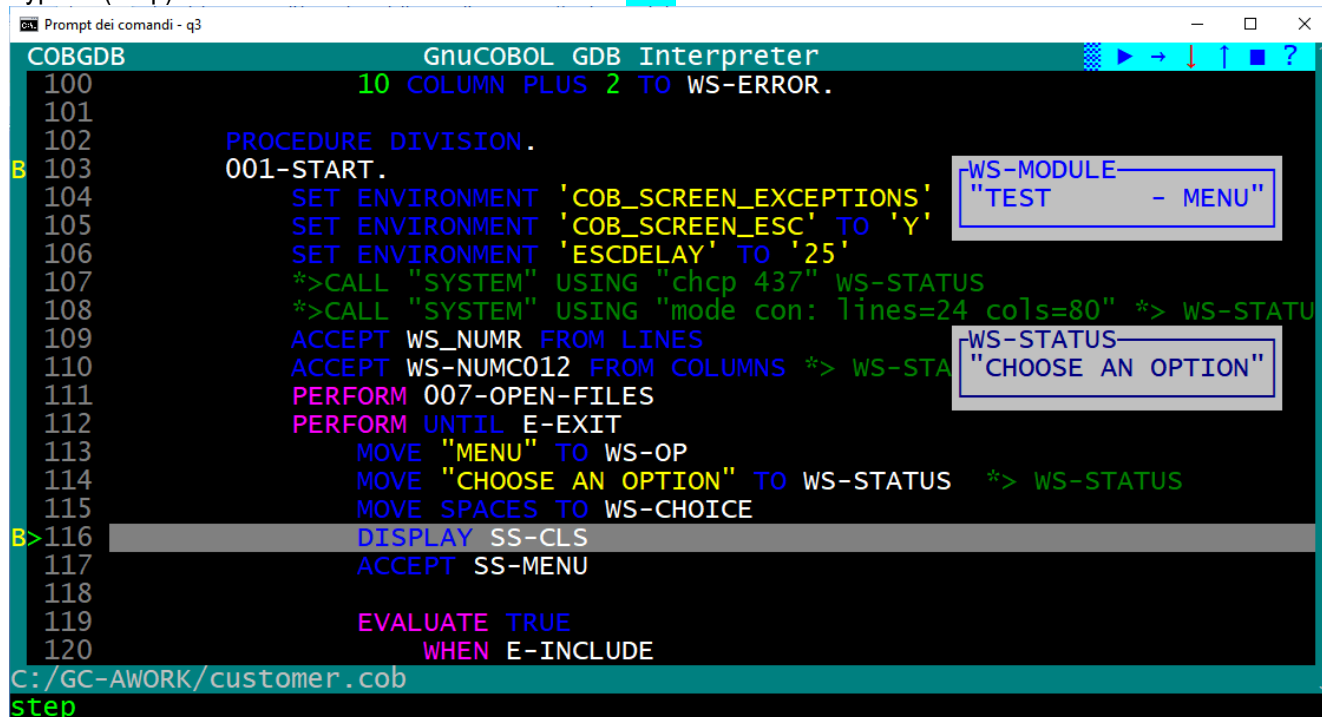
```


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2.7. Step Command

now you are back in the main debugging window:

Type **S** (Step) command or left click with mouse the  button to execute the DISPLAY statement at line 116

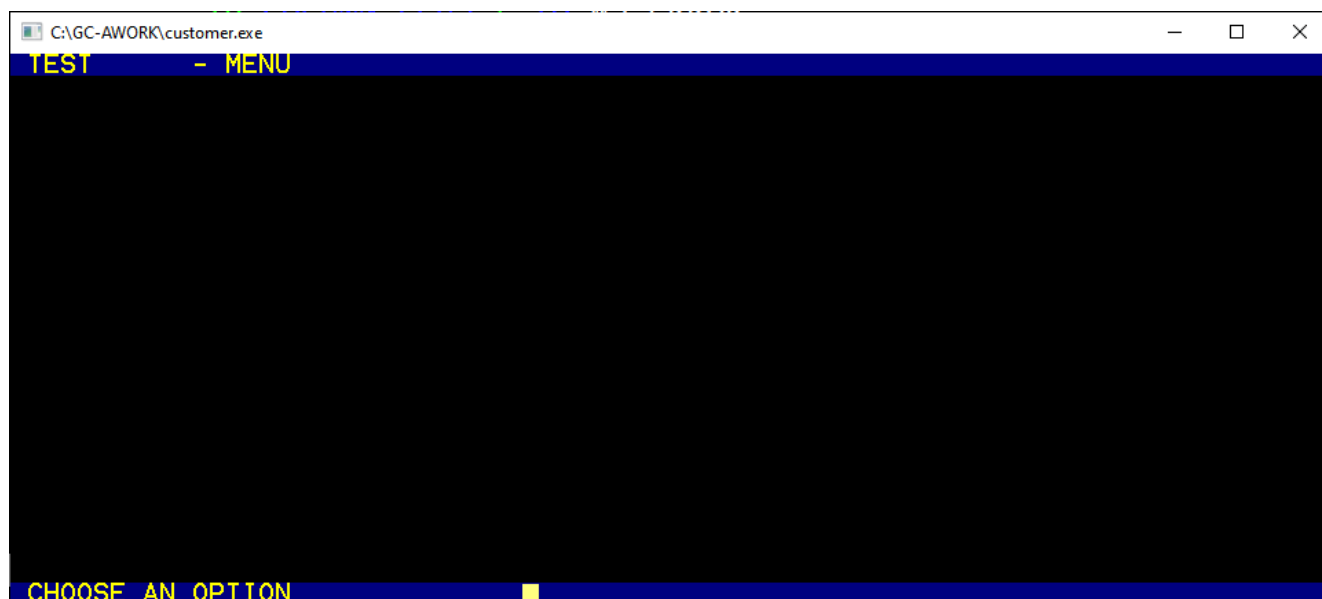


```

COBGDB GnuCOBOL GDB Interpreter
100      10 COLUMN PLUS 2 TO WS-ERROR.
101
102      PROCEDURE DIVISION.
103      001-START.
104          SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS'
105          SET ENVIRONMENT 'COB_SCREEN_ESC' TO 'Y'
106          SET ENVIRONMENT 'ESCDELAY' TO '25'
107          *>CALL "SYSTEM" USING "chcp 437" WS-STATUS
108          *>CALL "SYSTEM" USING "mode con: lines=24 cols=80" *> WS-STATUS
109          ACCEPT WS_NUMR FROM LINES
110          ACCEPT WS_NUMC012 FROM COLUMNS *> WS-STATUS
111          PERFORM 007-OPEN-FILES
112          PERFORM UNTIL E-EXIT
113              MOVE "MENU" TO WS-OP
114              MOVE "CHOOSE AN OPTION" TO WS-STATUS *> WS-STATUS
115              MOVE SPACES TO WS-CHOICE
116      B> 116 DISPLAY SS-CLS
117          ACCEPT SS-MENU
118
119          EVALUATE TRUE
120              WHEN E-INCLUDE
  
```

C:/GC-AWORK/customer.cob
step

in the other application window you can see the result of DISPLAY statement





```

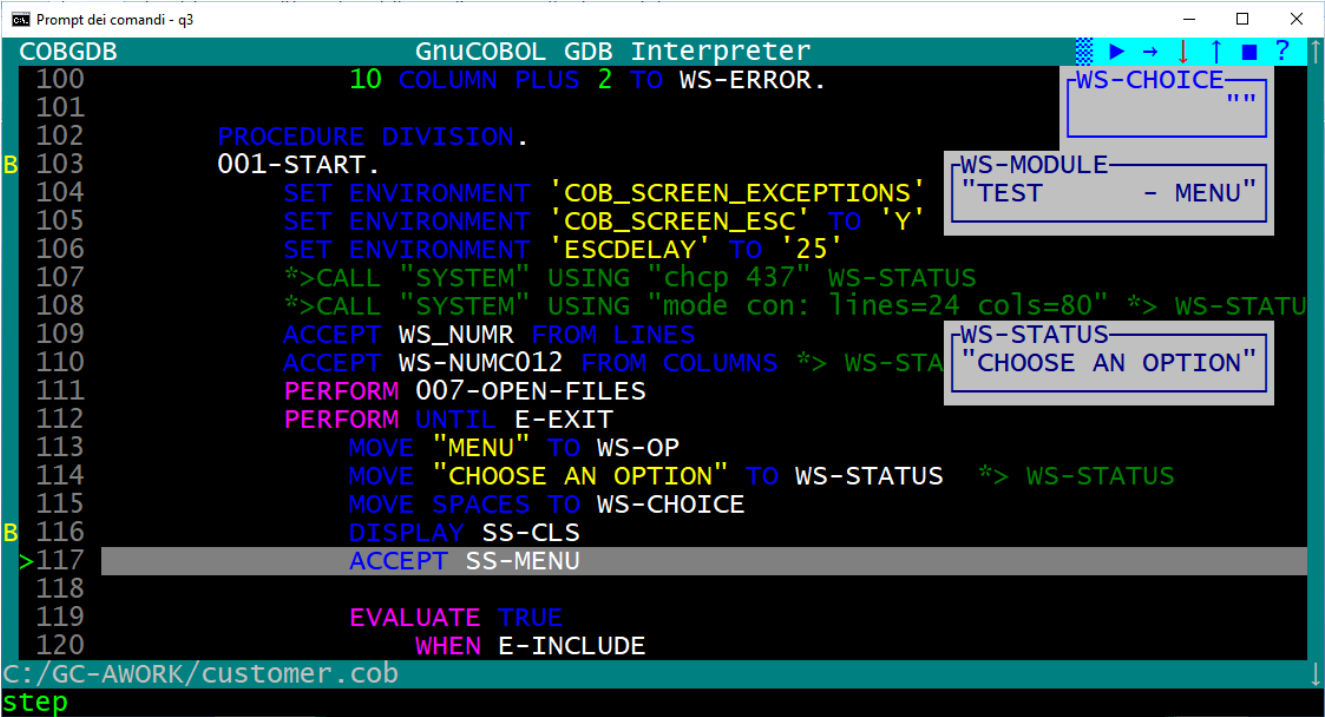
C:\GC-AWORK\customer.exe
TEST - MENU

CHOOSE AN OPTION
  
```

go back to debugging window and now the ACCEPT statement will be executed with S command

DOCUMENT CODE	MODULE: XXXXXXXXXX	USING COBGDB FOR GnuCOBOL	PAGE	GnuCOBOL
GC-901	GC-XXXXXX	Author: Eugenio Di Lorenzo	21	

Type **S** (Step) command or left click with mouse the  button again to execute the ACCEPT statement at line 117:



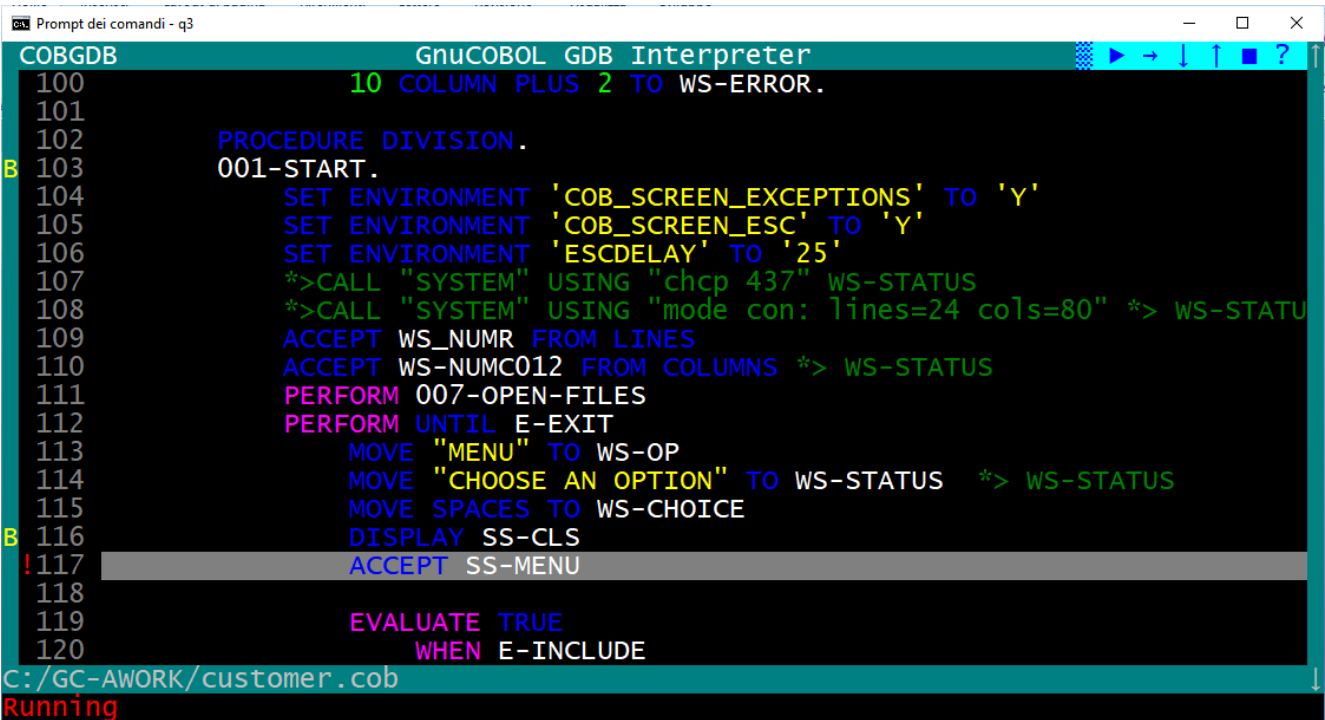
```

COBGDB          GnuCOBOL GDB Interpreter
100              10 COLUMN PLUS 2 TO WS-ERROR.
101
102      PROCEDURE DIVISION.
103      001-START.
104          SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
105          SET ENVIRONMENT 'COB_SCREEN_ESC' TO 'Y'
106          SET ENVIRONMENT 'ESCDELAY' TO '25'
107          *>CALL "SYSTEM" USING "chcp 437" WS-STATUS
108          *>CALL "SYSTEM" USING "mode con: lines=24 cols=80" *> WS-STATUS
109          ACCEPT WS_NUMR FROM LINES
110          ACCEPT WS_NUMC012 FROM COLUMNS *> WS-STATUS
111          PERFORM 007-OPEN-FILES
112          PERFORM UNTIL E-EXIT
113              MOVE "MENU" TO WS-OP
114              MOVE "CHOOSE AN OPTION" TO WS-STATUS  *> WS-STATUS
115              MOVE SPACES TO WS-CHOICE
116              DISPLAY SS-CLS
117              ACCEPT SS-MENU
118
119              EVALUATE TRUE
120                  WHEN E-INCLUDE

```

C:/GC-AWORK/customer.cob
step

A red **!** quotation mark appears on the line **! 117**.
This means that application is running and a user action is required at application window.




```

COBGDB          GnuCOBOL GDB Interpreter
100              10 COLUMN PLUS 2 TO WS-ERROR.
101
102      PROCEDURE DIVISION.
103      001-START.
104          SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
105          SET ENVIRONMENT 'COB_SCREEN_ESC' TO 'Y'
106          SET ENVIRONMENT 'ESCDELAY' TO '25'
107          *>CALL "SYSTEM" USING "chcp 437" WS-STATUS
108          *>CALL "SYSTEM" USING "mode con: lines=24 cols=80" *> WS-STATUS
109          ACCEPT WS_NUMR FROM LINES
110          ACCEPT WS_NUMC012 FROM COLUMNS *> WS-STATUS
111          PERFORM 007-OPEN-FILES
112          PERFORM UNTIL E-EXIT
113              MOVE "MENU" TO WS-OP
114              MOVE "CHOOSE AN OPTION" TO WS-STATUS  *> WS-STATUS
115              MOVE SPACES TO WS-CHOICE
116              DISPLAY SS-CLS
117              ACCEPT SS-MENU
118
119              EVALUATE TRUE
120                  WHEN E-INCLUDE

```

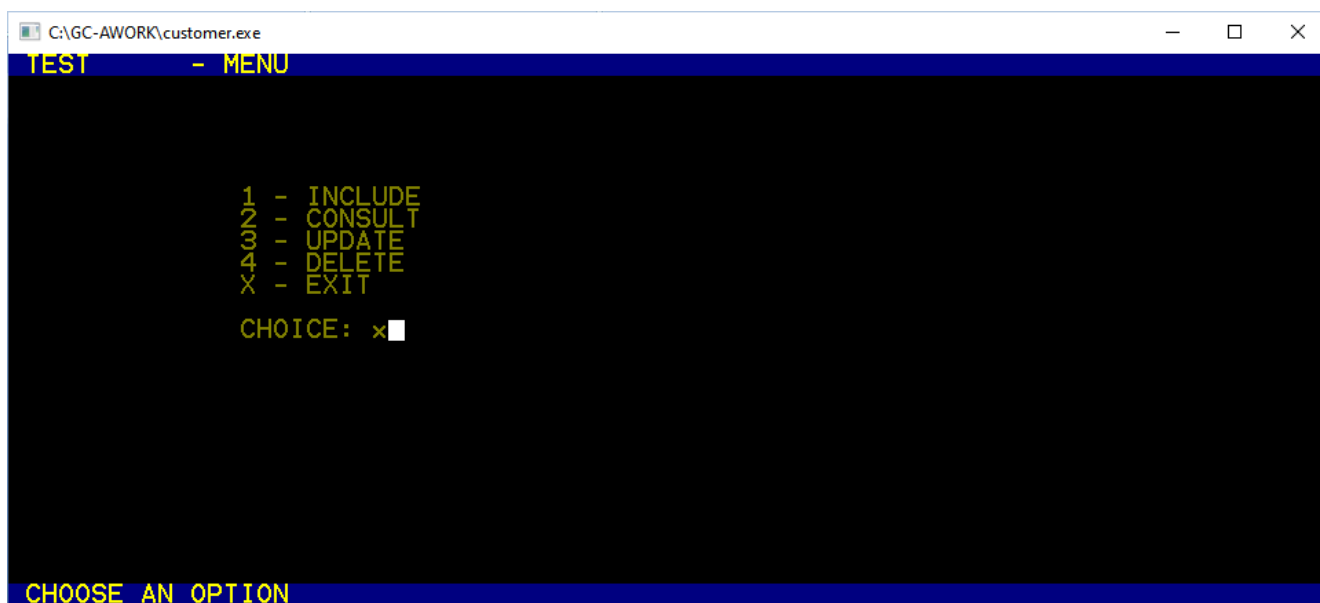
C:/GC-AWORK/customer.cob
Running

DOCUMENT CODE	MODULE: XXXXXXXXXX	USING COBGDB FOR GnuCOBOL	PAGE	GnuCOBOL
GC-901	GC-XXXXXX	Author: Eugenio Di Lorenzo	22	

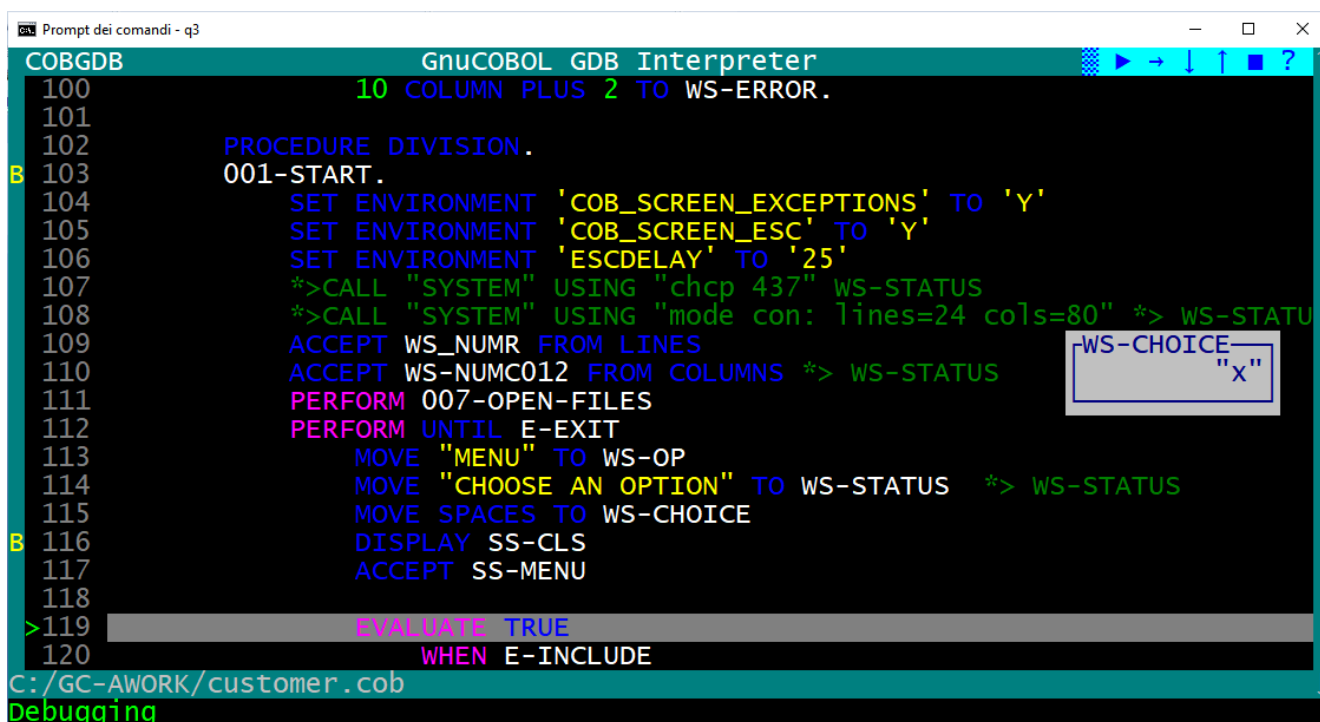
The application is running in a separate window.


The 'Accept' command switches the focus to application windows.

After a user action on application screen (ex type the "X" choice and Enter) it is necessary to click again on the 'debugger' window to continue debugging.



go back to debugger window: the ACCEPT statement has been executed:



DOCUMENT CODE	MODULE: XXXXXXXXXX	USING COBGDB FOR GnuCOBOL	PAGE	GnuCOBOL
GC-901	GC-XXXXXX	Author: Eugenio Di Lorenzo	23	

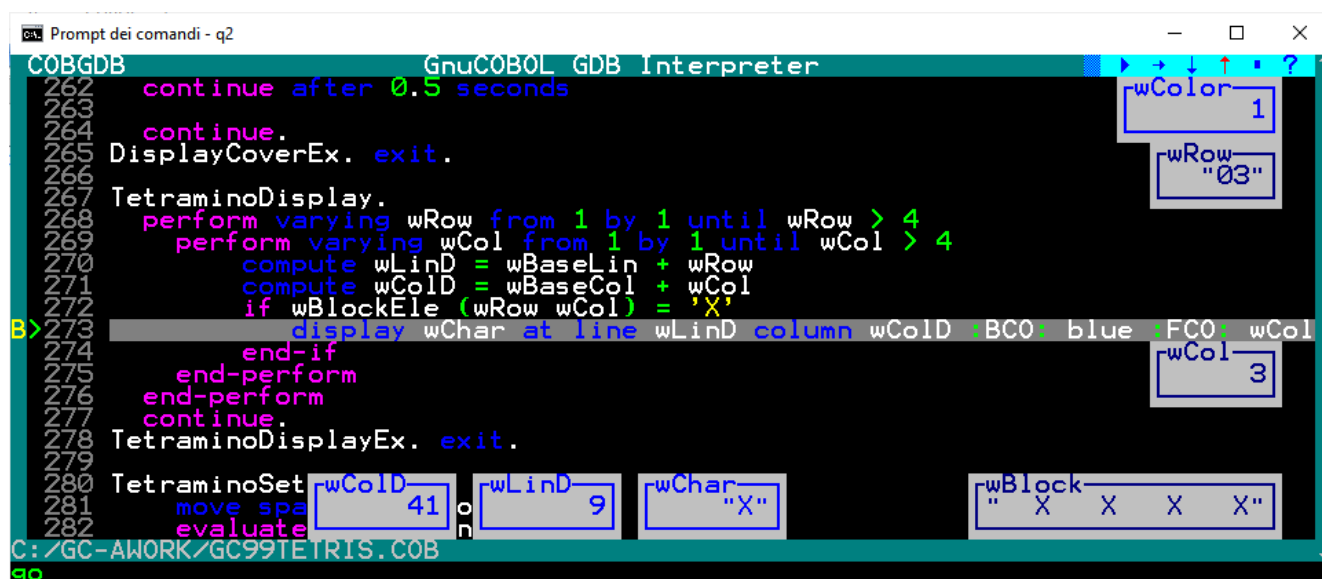
2.8. Pop-up Variable windows

During a debugging session COBGDB shows variable content.

Blue frame and values : variables of executing cobol statement

Black frame and values : variables of last executed cobol statement.


Sample:



```

COBGDB GnuCOBOL GDB Interpreter
262 continue after 0.5 seconds
263
264 continue.
265 DisplayCoverEx. exit.
266
267 TetraminoDisplay.
268 perform varying wRow from 1 by 1 until wRow > 4
269 perform varying wCol from 1 by 1 until wCol > 4
270 compute wLinD = wBaseLin + wRow
271 compute wColD = wBaseCol + wCol
272 if wBlockEle (wRow wCol) = 'X'
B> 273 display wChar at line wLinD column wColD :BC0: blue :FC0: wCol
274 end-if
275 end-perform
276 end-perform
277 continue.
278 TetraminoDisplayEx. exit.
279
280 TetraminoSet
281 move spa
282 evaluate
C:/GC-AWORK/GC99TETRIS.COB
go

```

DOCUMENT CODE	MODULE: xxxxxxxxxx	USING COBGDB FOR GnuCOBOL	PAGE	GnuCOBOL
GC-901	GC-XXXXXX	Author: Eugenio Di Lorenzo	24	

2.9. File Command

To show this command we use following sample:

cobgdb sample.cbl subsample.cbl subsubsample.cbl -x -lpcurses

where sample.cbl is the main program; it calls

--> subsample.cbl; it calls

--> subsubsample.cbl

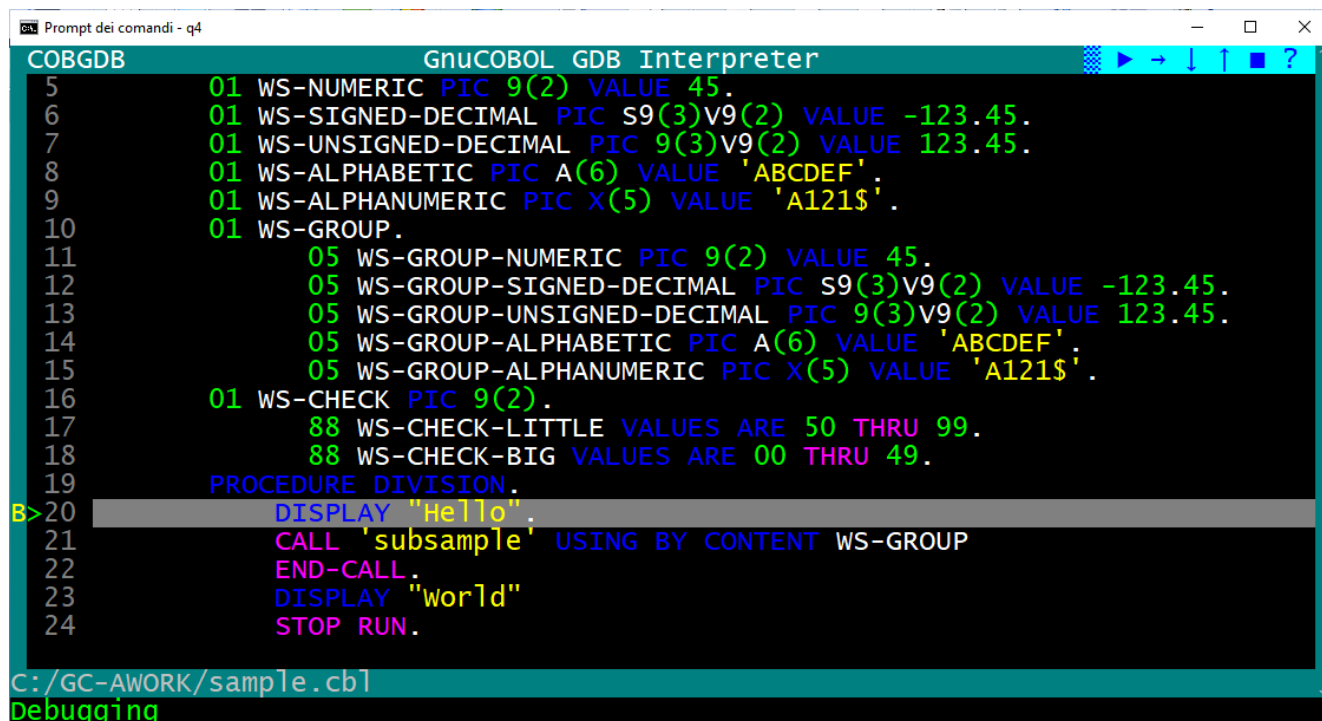
Source code is at <https://github.com/marcsosduma/cobgdb/tree/main/resources>.

This will create a single sample.exe executable.

This example shows that when you need to debug only subsample.cbl or only subsubsample.cbl you need to execute COBGDB with all three programs.

COBGDB sets the B breakpoint at first executable statement of first program "sample.cbl".

here use the R Run command to start the debugging session.




```

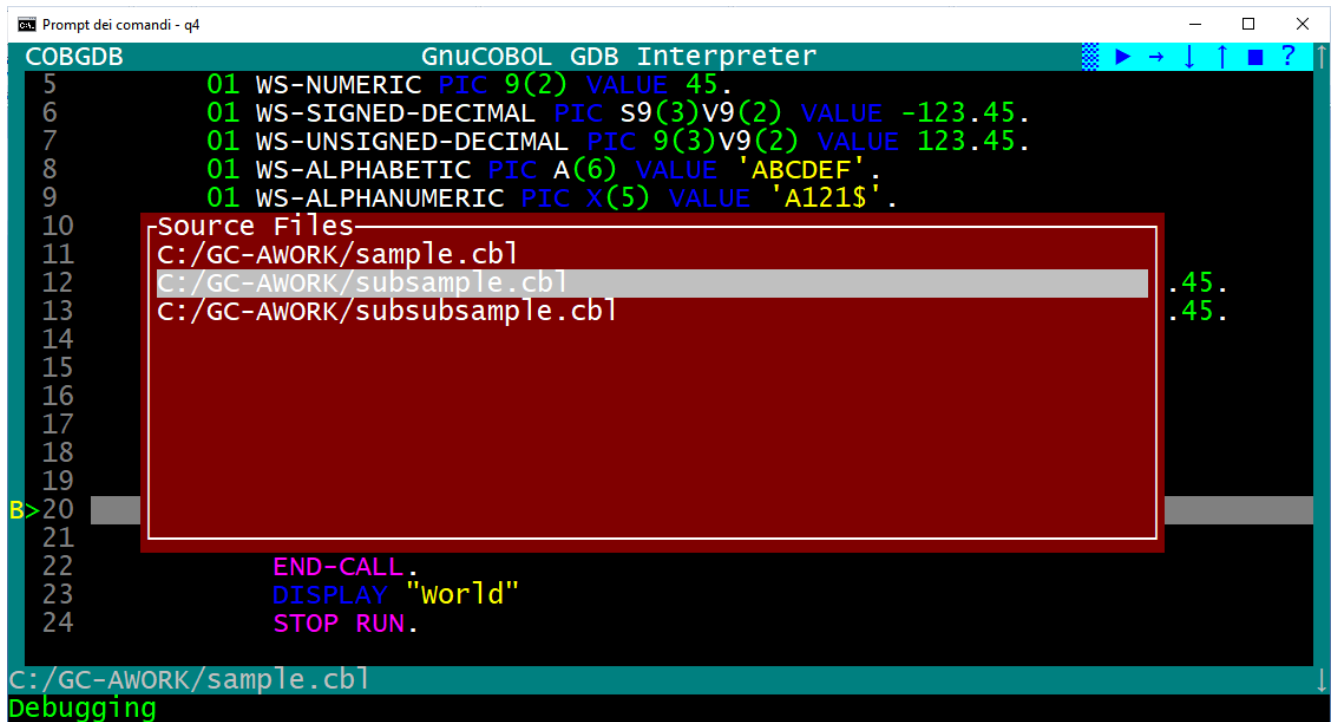
COBGDB                                     GnuCOBOL GDB Interpreter
5      01 WS-NUMERIC PIC 9(2) VALUE 45.
6      01 WS-SIGNED-DECIMAL PIC S9(3)V9(2) VALUE -123.45.
7      01 WS-UNSIGNED-DECIMAL PIC 9(3)V9(2) VALUE 123.45.
8      01 WS-ALPHABETIC PIC A(6) VALUE 'ABCDEF'.
9      01 WS-ALPHANUMERIC PIC X(5) VALUE 'A121$'.
10     01 WS-GROUP.
11         05 WS-GROUP-NUMERIC PIC 9(2) VALUE 45.
12         05 WS-GROUP-SIGNED-DECIMAL PIC S9(3)V9(2) VALUE -123.45.
13         05 WS-GROUP-UNSIGNED-DECIMAL PIC 9(3)V9(2) VALUE 123.45.
14         05 WS-GROUP-ALPHABETIC PIC A(6) VALUE 'ABCDEF'.
15         05 WS-GROUP-ALPHANUMERIC PIC X(5) VALUE 'A121$'.
16     01 WS-CHECK PIC 9(2).
17         88 WS-CHECK-LITTLE VALUES ARE 50 THRU 99.
18         88 WS-CHECK-BIG VALUES ARE 00 THRU 49.
19     PROCEDURE DIVISION.
B> 20     DISPLAY "Hello".
21         CALL "subsample" USING BY CONTENT WS-GROUP
22     END-CALL.
23     DISPLAY "world"
24     STOP RUN.

C:/GC-AWORK/sample.cbl
Debugging

```


DOCUMENT CODE	MODULE: XXXXXXXXXX	USING COBGDB FOR GnuCOBOL	PAGE	GnuCOBOL
GC-901	GC-XXXXXX	Author: Eugenio Di Lorenzo	25	

Now you can type the **F File** command and you will have the "Source Files" window.
In this sample we select the second program in the list (subsample.cbl) and type Enter.



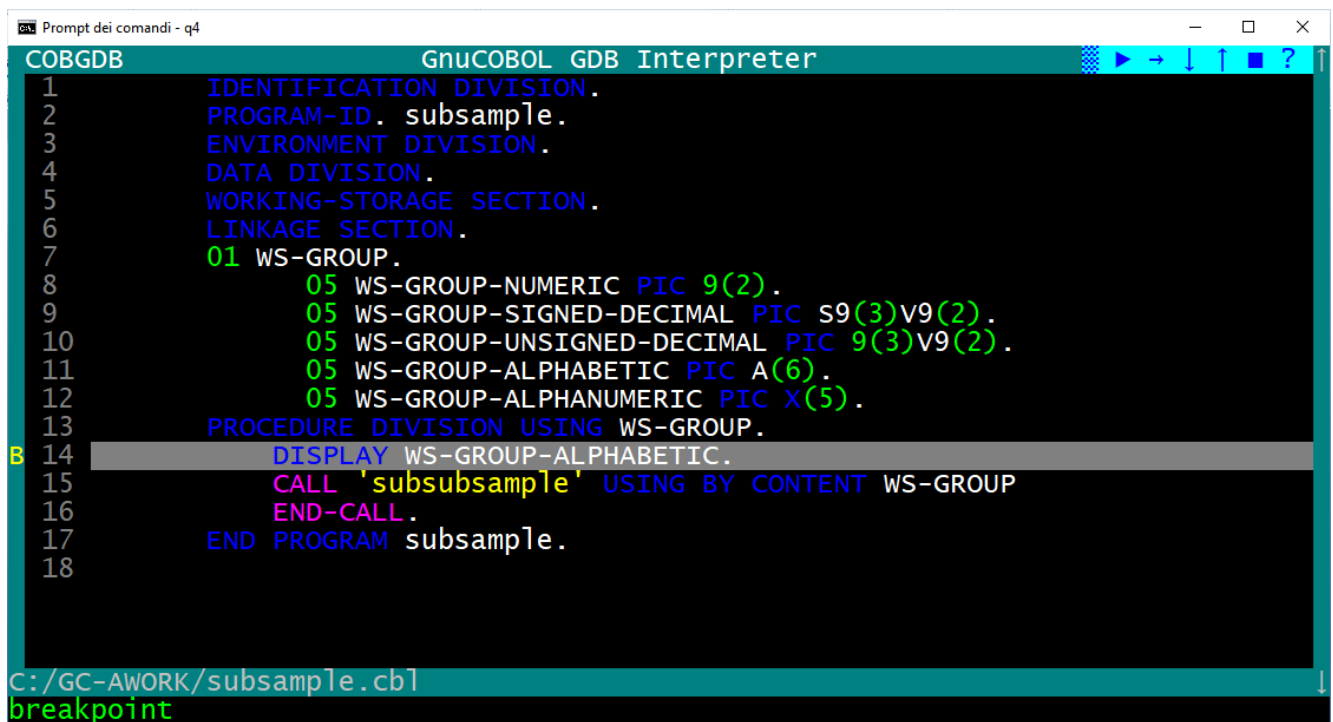
```

COBGDB GnuCOBOL GDB Interpreter
5 01 WS-NUMERIC PIC 9(2) VALUE 45.
6 01 WS-SIGNED-DECIMAL PIC S9(3)V9(2) VALUE -123.45.
7 01 WS-UNSIGNED-DECIMAL PIC 9(3)V9(2) VALUE 123.45.
8 01 WS-ALPHABETIC PIC A(6) VALUE 'ABCDEF'.
9 01 WS-ALPHANUMERIC PIC X(5) VALUE 'A121$'.
10
11 Source Files
12 C:/GC-AWORK/sample.cbl
13 C:/GC-AWORK/subsample.cbl
14 C:/GC-AWORK/subsubsample.cbl
15
16
17
18
19
20 B>
21
22 END-CALL.
23 DISPLAY "world"
24 STOP RUN.

C:/GC-AWORK/sample.cbl
Debugging

```

COBGDB shows the selected program source code where in this sample we type a B command at line 14.




```

COBGDB GnuCOBOL GDB Interpreter
1 IDENTIFICATION DIVISION.
2 PROGRAM-ID. subsample.
3 ENVIRONMENT DIVISION.
4 DATA DIVISION.
5 WORKING-STORAGE SECTION.
6 LINKAGE SECTION.
7 01 WS-GROUP.
8 05 WS-GROUP-NUMERIC PIC 9(2).
9 05 WS-GROUP-SIGNED-DECIMAL PIC S9(3)V9(2).
10 05 WS-GROUP-UNSIGNED-DECIMAL PIC 9(3)V9(2).
11 05 WS-GROUP-ALPHABETIC PIC A(6).
12 05 WS-GROUP-ALPHANUMERIC PIC X(5).
13 PROCEDURE DIVISION USING WS-GROUP.
14 B DISPLAY WS-GROUP-ALPHABETIC.
15 CALL 'subsubsample' USING BY CONTENT WS-GROUP
16 END-CALL.
17 END PROGRAM subsample.
18

C:/GC-AWORK/subsample.cbl
breakpoint

```

DOCUMENT CODE	MODULE: XXXXXXXXXX	USING COBGDB FOR GnuCOBOL	PAGE	GnuCOBOL
GC-901	GC-XXXXXX	Author: Eugenio Di Lorenzo	26	

now we type the F command again, then select the "sample.cbl" program and press Enter

```

Prompt dei comandi - q4
COBGDB GnuCOBOL GDB Interpreter
1 IDENTIFICATION DIVISION.
2 PROGRAM-ID. subsample.
3 ENVIRONMENT DIVISION.
4 DATA DIVISION.
5 WORKING-STORAGE SECTION.
6
7 Source Files
8 C:/GC-AWORK/subsample.cbl
9 C:/GC-AWORK/sample.cbl
10 C:/GC-AWORK/subsubsample.cbl
11
12
13
14 B
15
16
17
18
C:/GC-AWORK/subsample.cbl


```

now we are back to the sample.cbl program to continue the debugging session as we need.

```

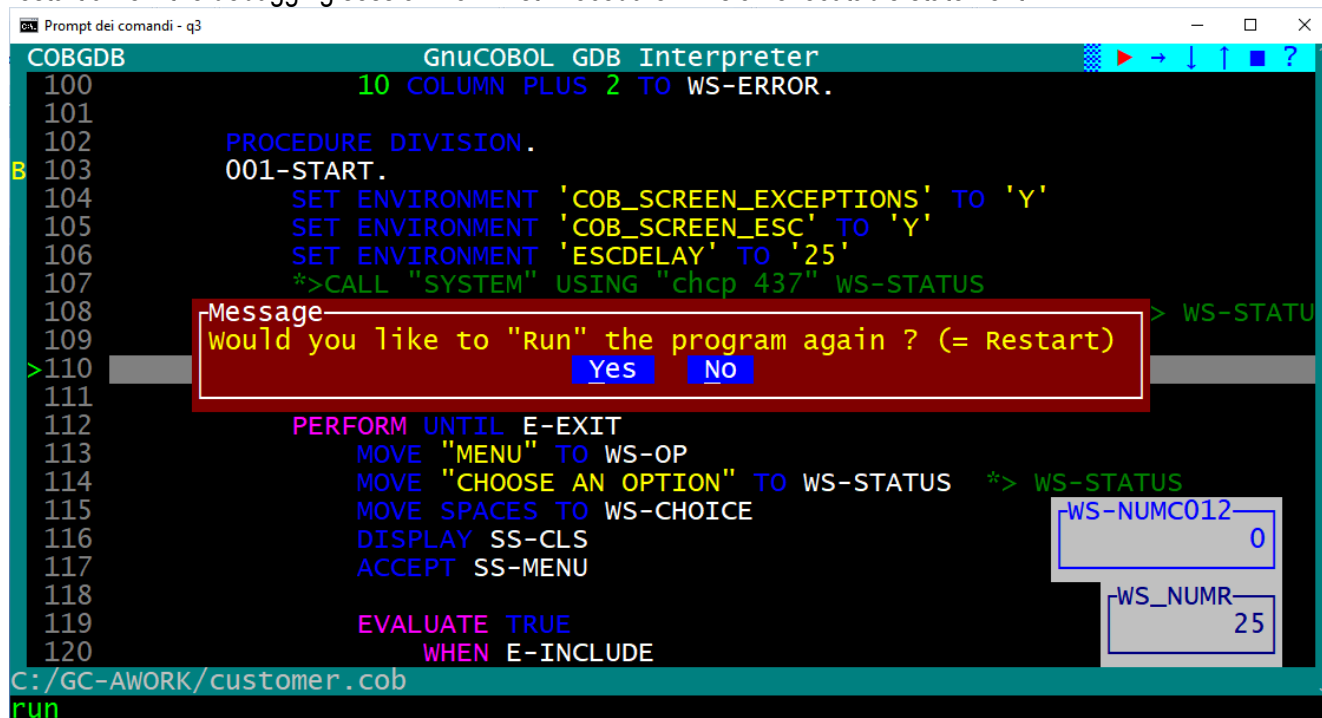
Prompt dei comandi - q4
COBGDB GnuCOBOL GDB Interpreter
5 01 WS-NUMERIC PIC 9(2) VALUE 45.
6 01 WS-SIGNED-DECIMAL PIC S9(3)V9(2) VALUE -123.45.
7 01 WS-UNSIGNED-DECIMAL PIC 9(3)V9(2) VALUE 123.45.
8 01 WS-ALPHABETIC PIC A(6) VALUE 'ABCDEF'.
9 01 WS-ALPHANUMERIC PIC X(5) VALUE 'A121$'.
10 01 WS-GROUP.
11 05 WS-GROUP-NUMERIC PIC 9(2) VALUE 45.
12 05 WS-GROUP-SIGNED-DECIMAL PIC S9(3)V9(2) VALUE -123.45.
13 05 WS-GROUP-UNSIGNED-DECIMAL PIC 9(3)V9(2) VALUE 123.45.
14 05 WS-GROUP-ALPHABETIC PIC A(6) VALUE 'ABCDEF'.
15 05 WS-GROUP-ALPHANUMERIC PIC X(5) VALUE 'A121$'.
16 01 WS-CHECK PIC 9(2).
17 88 WS-CHECK-LITTLE VALUES ARE 50 THRU 99.
18 88 WS-CHECK-BIG VALUES ARE 00 THRU 49.
19 PROCEDURE DIVISION.
20 B> DISPLAY "Hello".
21 CALL "subsample" USING BY CONTENT WS-GROUP
22 END-CALL.
23 DISPLAY "world"
24 STOP RUN.
C:/GC-AWORK/sample.cbl
Debugging

```

DOCUMENT CODE	MODULE: XXXXXXXXXX	USING COBGDB FOR GnuCOBOL	PAGE	GnuCOBOL
GC-901	GC-XXXXXX	Author: Eugenio Di Lorenzo	27	

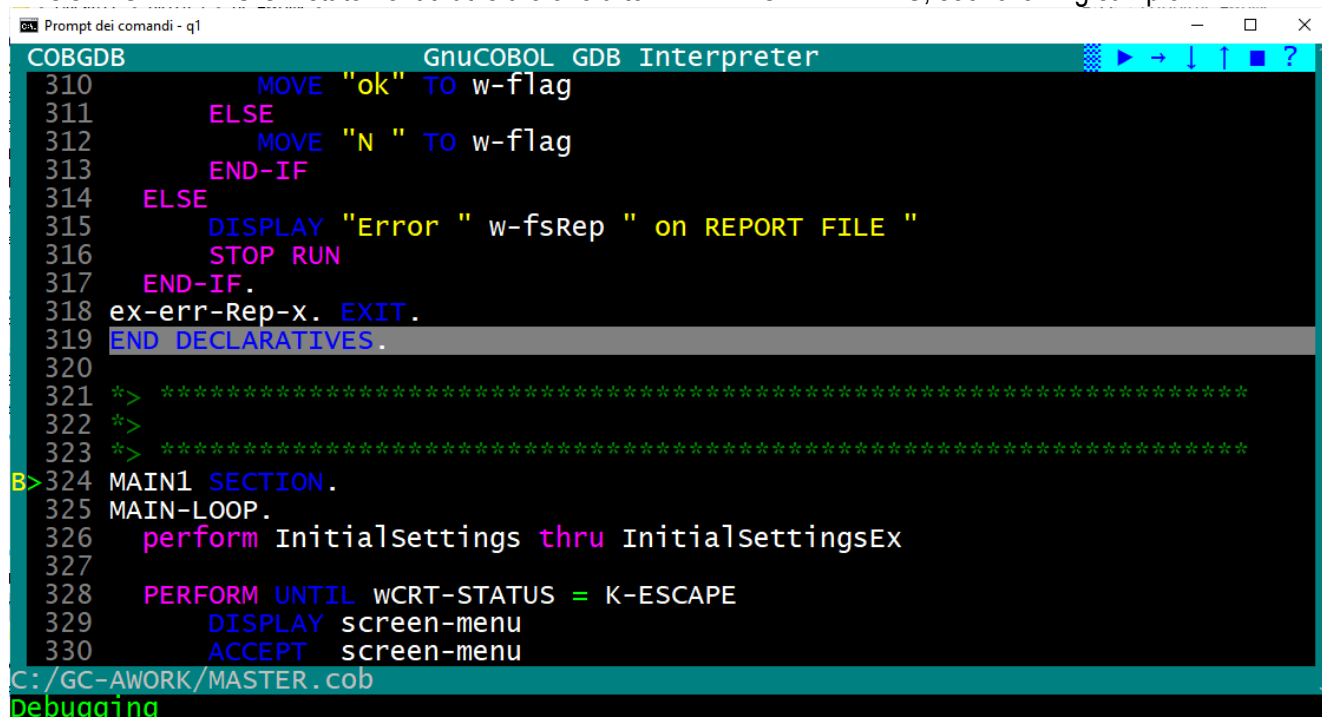
2.10. Run Command

If you click the Run command during a debug session you will receive a confirmation request, because Yes will restart a new the debugging session from first Procedure Division executable statement:




The screenshot shows the GnuCOBOL GDB Interpreter window. A red dialog box with a white border is centered on the screen. The dialog box contains the text: "Message" followed by "would you like to 'Run' the program again ? (= Restart)". Below this text are two buttons: "Yes" and "No". The background shows the COBGDB interface with line numbers 100 to 120. Line 100 is highlighted. The command prompt at the bottom shows "C:/GC-AWORK/customer.cob" and the "run" command has been entered.

Note: if program has DECLARATIVES then the first automatic B Breakpoint will be settled at first executable PROCEDURE DIVISION statement that is the one after END DECLARATIVES, see following sample:

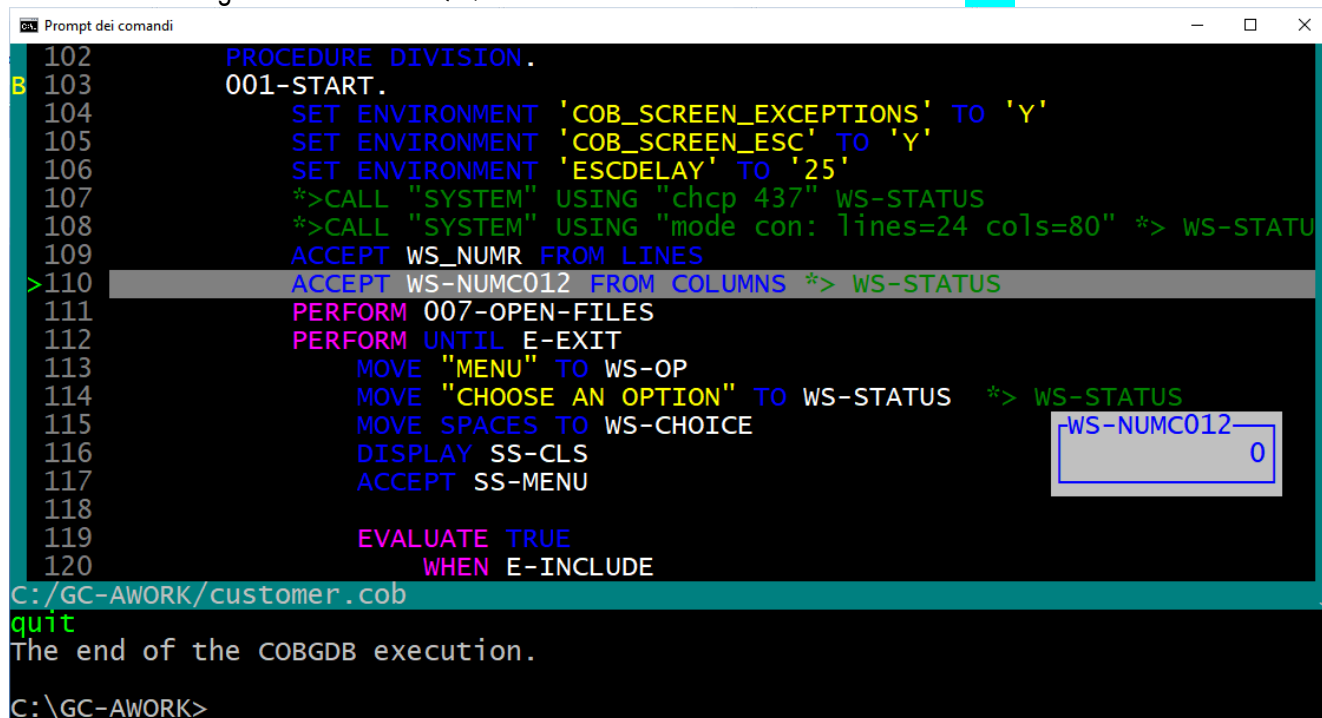


The screenshot shows the GnuCOBOL GDB Interpreter window. The COBGDB interface displays line numbers 310 to 330. Line 310 is highlighted. The command prompt at the bottom shows "C:/GC-AWORK/MASTER.cob" and the "Debugging" command has been entered. The code shows a series of statements, including "MOVE", "ELSE", "END-IF", "DISPLAY", "STOP RUN", "END-IF.", "ex-err-Rep-x. EXIT.", "END DECLARATIVES.", and "MAIN1 SECTION.". The breakpoint is set at line 324, which is the first executable statement after the "END DECLARATIVES." statement.

DOCUMENT CODE	MODULE: XXXXXXXXXX	USING COBGDB FOR GnuCOBOL	PAGE	GnuCOBOL
GC-901	GC-XXXXXX	Author: Eugenio Di Lorenzo	28	

2.11. Quit Command


To close the debug session use the **Q** Quit command or left click with mouse the  button



```

102      PROCEDURE DIVISION.
103      001-START.
104          SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
105          SET ENVIRONMENT 'COB_SCREEN_ESC' TO 'Y'
106          SET ENVIRONMENT 'ESCDELAY' TO '25'
107          *>CALL "SYSTEM" USING "chcp 437" WS-STATUS
108          *>CALL "SYSTEM" USING "mode con: lines=24 cols=80" *> WS-STATUS
109          ACCEPT WS_NUMR FROM LINES
110      >110  ACCEPT WS-NUMC012 FROM COLUMNS *> WS-STATUS
111          PERFORM 007-OPEN-FILES
112          PERFORM UNTIL E-EXIT
113              MOVE "MENU" TO WS-OP
114              MOVE "CHOOSE AN OPTION" TO WS-STATUS  *> WS-STATUS
115              MOVE SPACES TO WS-CHOICE
116              DISPLAY SS-CLS
117              ACCEPT SS-MENU
118
119              EVALUATE TRUE
120                  WHEN E-INCLUDE
quit
The end of the COBGDB execution.
C:\GC-AWORK>

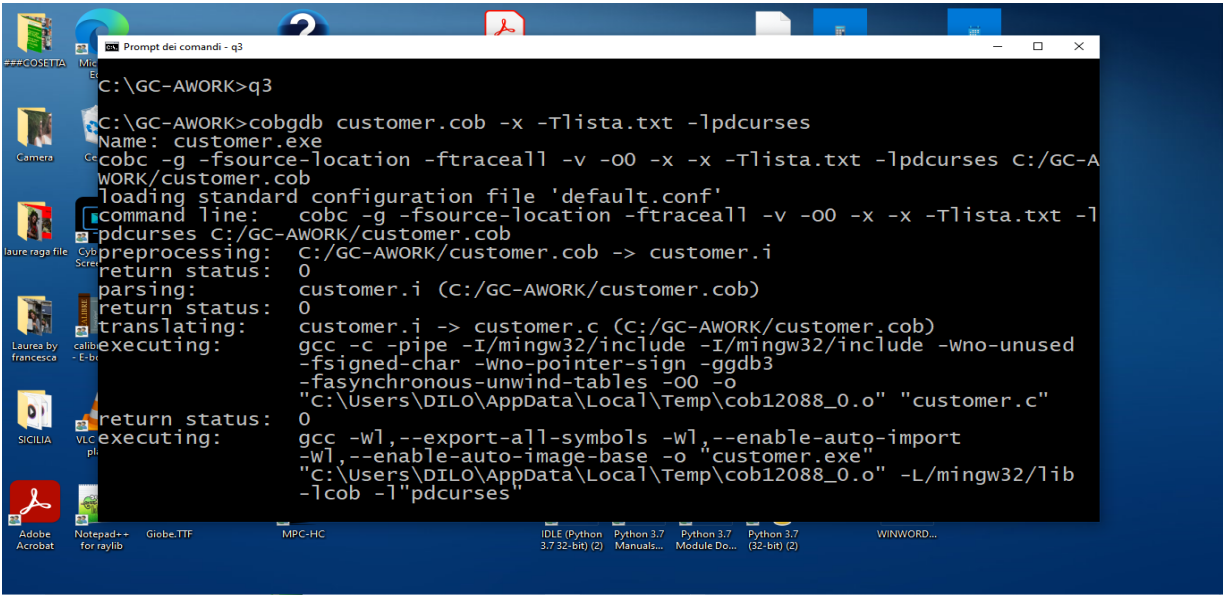
```

DOCUMENT CODE	MODULE: XXXXXXXXXX	USING COBGDB FOR GnuCOBOL	PAGE	GnuCOBOL
GC-901	GC-XXXXXX	Author: Eugenio Di Lorenzo	29	

3. Document Change Log

CHANGE LOG
<p>Version1 of 2023.12.12. First release</p> <p>. Version2 of 2023.12.23. Step by Step sample of use is added Some minor changes</p> <p>. Version3 of 2024.0218. Restructured showing new cobgdb screens and features</p>

Technical info



```

C:\GC-AWORK>q3
C:\GC-AWORK>cobgdb customer.cob -x -Tlista.txt -lpcourses
Name: customer.exe
cobc -g -fsource-location -ftraceall -v -O0 -x -x -Tlista.txt -lpcourses C:/GC-A
WORK/customer.cob
loading standard configuration file 'default.conf'
command line: cobc -g -fsource-location -ftraceall -v -O0 -x -x -Tlista.txt -l
pcourses C:/GC-AWORK/customer.cob
preprocessing: C:/GC-AWORK/customer.cob -> customer.i
return status: 0
parsing: customer.i (C:/GC-AWORK/customer.cob)
return status: 0
translating: customer.i -> customer.c (C:/GC-AWORK/customer.cob)
executing: gcc -c -pipe -I/mingw32/include -I/mingw32/include -wno-unused
-fsigned-char -wno-pointer-sign -ggdb3
-fasynchronous-unwind-tables -O0 -o
"C:\Users\DILO\AppData\Local\Temp\cob12088_0.o" "customer.c"
return status: 0
executing: gcc -w1,--export-all-symbols -w1,--enable-auto-import
-w1,--enable-auto-image-base -o "customer.exe"
"C:\Users\DILO\AppData\Local\Temp\cob12088_0.o" -L/mingw32/lib
-lcob -l"pcourses"

```